

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934.
Published monthly.

Vol. LIII Philadelphia, May, 1937 No. 3

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SUBSCRIPTION RATES: United States and United States Possessions and all countries in the Postal Union—\$3.00 per year. Canada and Foreign—\$4.00 per year. Single copies—40 cents.

Owned and Published by



CHILTON COMPANY

(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

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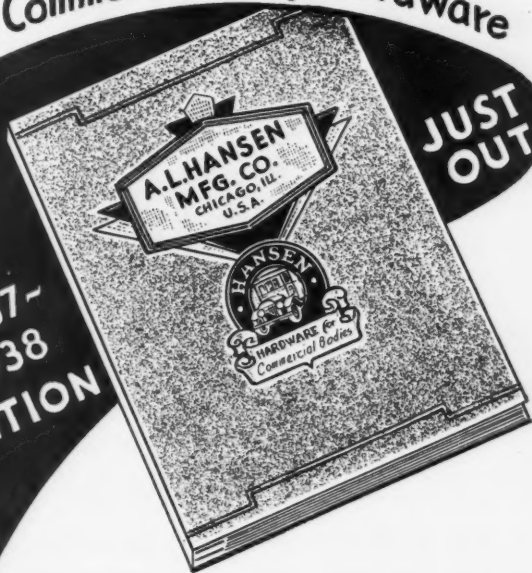
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COMMERCIAL CAR JOURNAL
May, 1937

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TEXACO

COMMERCIAL CAR JOURNAL
MAY, 1937

THE



COMMERCIAL CAR JOURNAL

Vol. LIII.

No. 3

MAY, 1937

Overload

A Paragraph of Praise

THE two-day meeting of utility fleet operators in Baltimore last month was a big success. It was the first vocational group meeting sponsored by the S.A.E. and John Orr, of Equitable Auto, chairman of the S.A.E. Transportation and Maintenance Activity Committee, deserves a big hand for having had the idea, and for having seen it through. Nothing is more ideal than for operators having similar problems to get together and discuss them frankly. Besides—and this is very important—it's easier to sell the boss on a vocational group meeting than on a general one. Personally, we're rooting for more vocational meetings. Meanwhile our report of the utility affair is on page 20.

Regulation Hits Us, Too

IT was just our luck to have the I.C.C. come along and darn near ruin the story we worked up months ago on the way Consolidated Motor Freight Lines handles its self-insurance. The story was ready back in March but we couldn't handle it in the April special

issue. We scheduled it for May and we were just going to press when the I.C.C. decided that Consolidated did not have adequate resources for self-insurance. It was too late to pull it out and, moreover, it didn't take us long to convince ourselves that the facts had value regardless of the decision. For that reason we give them to you.

Human Interest

AUTHOR GLASS, responsible for the story of what the Ohio River flood did to fleets, wrote his article while flat on his back with a leg that was broken after he had taken all kinds of chances in flood relief work. He had most of his facts before he was laid up. A telephone and very kind operator friends helped him out in the pinches and the result is a very informative article. His involuntary "lay-down" strike was in its eleventh week at last report.

Captain Wilson in Command

THE spirit displayed by the trucking industry during the crisis is ably recounted by Ross Wilson, of Trailmobile, who carries the commission of Captain in the Army Reserve Corps, and who commanded a camp of several hundred Negro flood refugees. His eyewitness account will make you proud of the trucking industry.

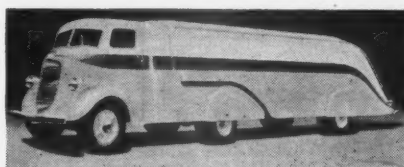
"Miss Trailmobile" to the Rescue

GOOD deeds are sometimes poorly rewarded. Author Wilson tells us of

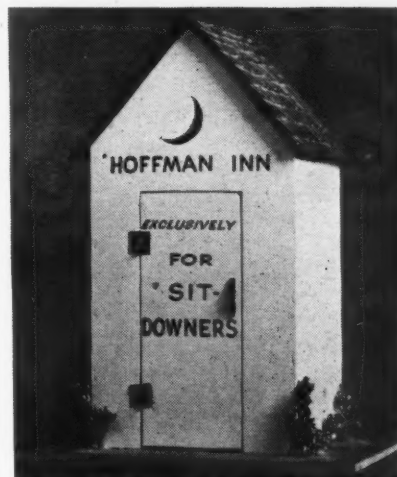


Just 55 seconds are consumed from start to finish of this washing process. As a vehicle rolls up it interrupts a beam from a photo-electric device which turns on the water, and as it leaves another beam is interrupted that turns off the water. This is efficiency plus

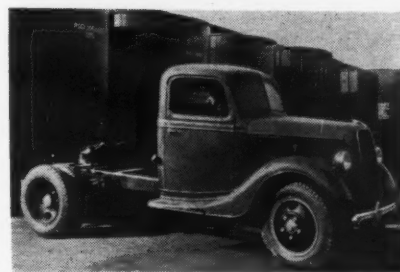
COMMERCIAL CAR JOURNAL
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This streamline job is a result of a design developed by Fruehauf engineers which provides maximum closure between tank-trailer nose and tractor cab. The cab extension is formed to the same contour as the nose of the trailer. The fifth wheel is so located that the cab can be turned at right angles



This replica of an old-fashioned retreat was presented to Gov. Hoffman of New Jersey at the annual banquet of the Motor Truck Association of Connecticut, Inc., April 1. Inside construction is to scale, including a miniature Sears, Roebuck catalog. The Governor, as you would expect if you knew him, took it in the right spirit



America's No. 1 "spotter" is Tim Donahue who spots or switches trailers at a busy Buffalo freight terminal. With his Ford tractor he handles trailers for tired drivers who arrive with their loads after driving hundreds of miles, in some cases. Result: 60 per cent fewer accidents because over-the-road drivers rest while Tim does the spotting



Some sort of endurance record is being piled up by this Lycoming-powered Stewart operated by Shirks Motor Express of Lancaster, Pa. It has already turned over for 400,000 miles and although sleeved once it continues to go places. No need to tell you Shirks is satisfied

THE Overload

the case of "Bud" Andriot, Trailmobile distributor at Louisville. In his prize-winning speed boat Andriot covered the Louisville waterfront during the flood in rescue work. While engaged in this work his boat sank in flood water and was lost down the river.

Let the Seller Beware

SALESMANSHIP sometimes is just a bad habit. There's the case of Isaac Minor, 25-year-old Negro, of Louisville, who took a tire from a parked Silver Fleet Motor Express truck, and made the mistake of trying to sell it to the driver, breakfasting in a nearby restaurant. "Judge," said he, "I'm a salesman. I just tried to sell something." Sentence: a year in the "pen."

S. O. S.

THE Ford company has designed a radio especially for its 1937 closed cab to add to the comfort of drivers who have long hauls. This reminds us that we'd like to hear from trucking concerns that are using radios as a driver comfort or short-wave radios in dispatching. Just tip us off and we'll be around to see you wherever you are.

A Word of Warning

WE have the word of a tire manufacturer that the greatly increased prices of crude rubber and good fabric have made it more economical for



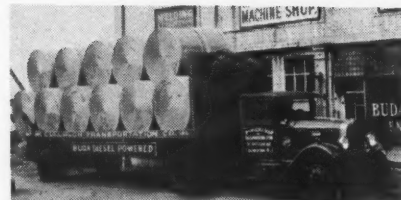
Shortly after it was discovered that black strap molasses mixed with any kind of farm feed made excellent food for farm stock, this Diamond T began making the rounds of the farms in Michigan with an impregnator mounted on the chassis which produces a prepared food mixed with molasses

some manufacturers of the cheaper grades of truck tires to resort to reclaimed rubber and cheaper fabric in second, third and fourth line tires. He says rightly that it is treacherous to risk truck cargoes on such equipment.

Mr. Prycinski Learns

DID you read about "The Education of Mr. Prycinski" in Reader's Digest for April? In case you didn't, know ye that Mr. Prycinski is a Minnesota truck owner. He wanted work driving his truck on a WPA project. He filled out the necessary application and laboriously signed his name. This got him

Post this picture where your drivers may see it. It is an artist's conception of the kidnapper of Charles Mattson, 10 years old, Tacoma, Wash. The government has offered a \$10,000 reward. The kidnapper was described as being 30 years of age, 5 ft. 7 or 8 in. tall, 145 to 165 lb. in weight, swarthy, with a slight foreign accent in speech, high cheek bones and dimple in chin. His nose appeared to be broken and he did not stand erect



Wm. McCullough of East Rutherford, N. J., has been so pleased with the performance of this Buda diesel-powered Ward LaFrance truck that he is ordering seven more of the same. Seize: "We have operated this truck for six months—39,000 miles—and have saved \$1,600 in fuel already . . ."

the job but in the course of the next two weeks he had to sign his name to 201 various other papers. This so improved his handwriting that when it came time to pay him, Mr. Ickes' minions wouldn't believe it was the same signature and held up his pay check.

When Is a Truck a "He"?

ANOTHER Minnesota truckman is J. Robert Landry. He identifies his trucks with Christian names, such as Felix, Mary Rita, Alice May, etc., painted on the cab. What we'd like to know is how Mr. Landry manages to pick out the he's from the she's.



When the Holy Rosary Church in Indianapolis found itself heavily in debt, it erected a modern truck service station on the lot next door. The station is a pip, as the picture shows, and the debt, as the saying goes, is being liquidated. It has spacious driveways, a high ceilinged lubrication room to accommodate trucks and trailers, an extra long pit for the same purpose and a bunk room for tired drivers to rest in. To National Petroleum News goes credit for digging this one up



This is a "one-man transportation show" conducted recently in St. Louis by the McCabe-Powers Auto Body Co., of that city. A total of 51 units were exhibited including every type of body made and sold by this company. Every truck with a sales outlet in St. Louis was represented in the show—free. Nearly 4000 interested show-goers went through the door in the three days the show was on. Prospects were fine. A bigger and better show looms for next year

Cars

TO THE GROUND



The appearance of this Autocar is as fresh as Hanscom's pies and as delicious from an operating standpoint. The smartly paneled body measures 15½ ft. long inside, 81 in. wide and 78 in. high. Special feature is a hydraulically operated side gate as shown above which may be lowered and raised at the driver's convenience. Shut away, it's out of sight. The lettering on the truck is of raised aluminum and the molding is stainless steel. Finish is a two-tone green and the entire job is enough to make anyone green with envy.

Piston Ring Powwow

From Binh Dinh to Binghamton this department's agents roam. And strange tales they bring back. The latest to come in which we know will prove accurate is a report that after all these years and all the different designs of oil control piston rings, an old maker will introduce a compression ring of a new design. The new ring is beyond the testing stage and one engine maker is quietly using them in production engines.

Camelbacks Complete

Within a few months the truck industry will be one step nearer unanimity in offering camelbacks. This department has satisfied itself that it is fact that a suave appearing cab-over-engine model will make its initial bow in the specified time.

Camelback Changeover

A package is now being manufactured which makes it possible to move the gear-shifting control and steering forward so that a complete chassis can be changed over to camelback design. The changeover can be done by truck distributors as well as manufacturers. After getting this information we turned the matter over to the agent in charge of business relations who informs us that arrangements have been all but completed for distribution of the changeover controls.

Sludge Solvent

With overpowering chagrin this department reports near failure on its mission to investigate a sludge remover. There is one being tested but the sponsoring company guards its reputation and quality of its products so zealously that it refuses to give out any information until everyone is satisfied. So closely did the company adhere to this rule that this department does not know whether the new product is animal, mineral or vegetable.

Friction Favorite

If you like ideas even though they may be a little vague on details you will enjoy a report from one of our midwest agents to the effect that experiments are going on apace to determine which metals are best suited to act as brake lining and clutch facing. The experimenters, according to latest dispatches, are not only interested but enthusiastic.

Money Method

A fuel oil converter property has changed hands recently and while our information is not direct it is from one of our seldom inaccurate sources. The story is that the new manufacturer has enough currency of the realm to complete some development work which, in the minds of interested parties, it needed to be the useful piece of equipment that it can be.

LCL Letter

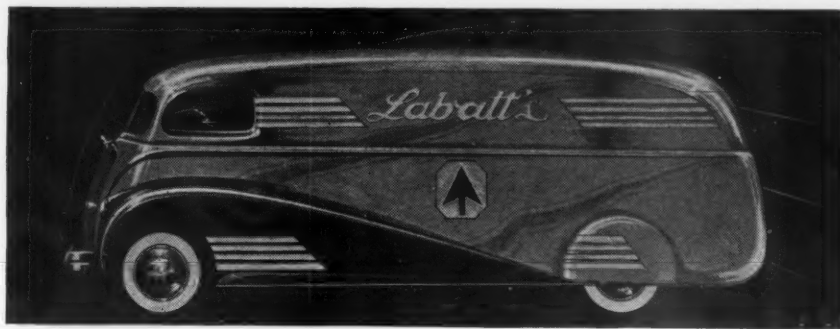
The curse will soon be removed from transporting small shipments of refrigerated cargo. This belligerent statement is made as a result of news that an lcl box is now being produced which makes it possible to ship perishables on a non-refrigerated truck. The box is 5 ft. by 6 ft. by 7 ft. and it contains two ice bunkers.

International Intrigue

The annual report of the International Harvester Co. contains this statement. "The Company is continuing development work to meet the Diesel tractor, truck and industrial power unit requirements of the future and present improvements and refinements give strong promise of an equally good record in the future." You can make what you will of that statement without any help from this department.

Free Fodder

Our trump card is a chart showing Interstate Commerce Commission lighting regulations, shown in color and easily decipherable at a moment's glance. Get yours free by sending the editor your name, address, firm name and number of trucks you operate.



White looks to the future with this streamliner specially designed for John Labatt, Ltd., Canadian brewers, by Count Sakhnoffsky. You can't advertise beer or liquor in Canada so the brewer wanted something that would make people remember him by. He got it in this cab-over-engine truck.

Utility



I

FLEET MEN DISCUSS...

IT'S a difference of opinion that makes horse races and, apparently, it makes fleet operation the interesting business that it is. Considering the many variables encountered in fleet operation this is not surprising.

Running true to this form public utility fleet operators met in Baltimore during the middle of last month, and discussed matters dealing with the practical aspects of fleet operation, the variety of which was exceeded only by the variety of opinions expressed. The occasion was the first "vocational group meeting" sponsored by the Transportation & Maintenance Activity of the Society of Automotive Engineers. There were 250 persons in attendance from 18 states, the District of Columbia and Canada.

The topic of the opening session was "oil filters" and it was a stimulating choice, as events proved.

The many angles of this subject were ably covered in a paper presented by James I. Clower, associate professor of machine design, Virginia Polytechnic Institute. He reached this general conclusion:

"It cannot be said that an oil filter is essential to the operation of a motor vehicle. However, the use of one of the more efficient types will, in my opinion, greatly extend the interval between oil changes, and the saving in oil thereby made will in general more than cover the cost of the filter. Furthermore, the use of a filter will generally reduce piston, ring and bore wear, and valve and ring sticking, and in this way reduce oil consumption and possibly fuel

Oil Filters

Oil Changing

Throttle Stops

Utility Bodies

Supervision

And Pooling

By **GEORGE T. HOOK,**

Editor, Commercial Car Journal



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consumption. Some of the present filters are capable of maintaining the acidity of the oil at a low value, thereby minimizing corrosive effects, especially on the newer copper-lead and cadmium-silver bearing alloys."

SPEAKING of crankcase oil impurities, Professor Clower said there does not appear to be sufficient test data to support the conclusion that dilution permits wear. On the contrary, recent tests indicate that no appreciable increase in wear is discernible even with extremely highly diluted oils.

"In this section of the country," he declared, "it is questionable whether it is ever necessary to change oil because of excessive dilution. In the northern sections of the country if the vehicle is used during extremely cold weather for only short trips when frequent starts and stops are made and the choke is used freely, and, especially if the motor is in poor mechanical condition, one may be justified in changing oil because of excessive dilution."

The impurities more likely to cause trouble consist mainly of metal particles worn from the engine, core sand, drillings, metal chips loosened by hot oil, vibration and metal expansion, and in some cases iron oxides resulting from the corrosion of various interior surfaces. These impurities will gradually accumulate and by promoting oil oxidation and sludge formation reach a point where the oil becomes unfit for use unless means are provided for their removal. Sludge is usually of an acid nature, Professor Clower said, and if

permitted to collect for any appreciable period may cause corrosion, especially to the highly polished surfaces of the barrel, piston, rings, rods and crankshaft. Dirty oil cannot and does not lubricate as satisfactorily as clean oil.

HAVING thus led up to the need for filters Professor Clower went on to discuss filters themselves.

"Whereas filters were originally designed to filter out sludge after it had formed," he said, "today the idea is to remove the sludge-forming elements before they have had an opportunity to combine. This change in viewpoint has done much toward improvement of filters during the past five years. The present trend appears to be toward the use of the by-pass, removable element type which combines both the principles of filtration and absorption."

He went on to say that a good filter should possess a maximum number of the following desirable features:

"1. It should remove all harmful impurities, including asphaltenes and so-called colloidal carbon.

"2. It should be convenient to ser-



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Photographs of Utility fleetmen who played an active role in the SAE Transportation and Maintenance Meeting for Utility Fleets in Baltimore April 15 and 16 are of (1) T. C. Smith, American Telephone & Telegraph Co.; (2) Capt. O. A. Axelson, Columbia Gas & Electric Corp.; (3) F. K. Glynn, American Telephone & Telegraph Co.; (4) E. W. Jahn, Consolidated Gas, Electric Light and Power Co.; (5) W. H. Beck, of Sherwood Bros., Inc.; (6) A. W. Morton, American Hammered Piston Ring Co.; (7) John M. Orr, Equitable Auto Co.

vice without disturbing the oiling system.

"3. It should be capable of maintaining its efficiency for 5000 miles.

"4. Its first cost and maintenance cost should be such that its use is economically justifiable.

"5. The filtering element should not pack or channel.

"6. It should maintain an acceptable oil color for a reasonable period of operation.

"7. The volume of oil passing through should be so controlled as not to wash back into the oil stream impurities collected.

"8. The construction should be such that the dirty oil cannot 'short-circuit.'

(TURN TO PAGE 97, PLEASE)



WHAT

Fleets DID

FOR FLOOD VICTIMS—

By ROSS H. WILSON

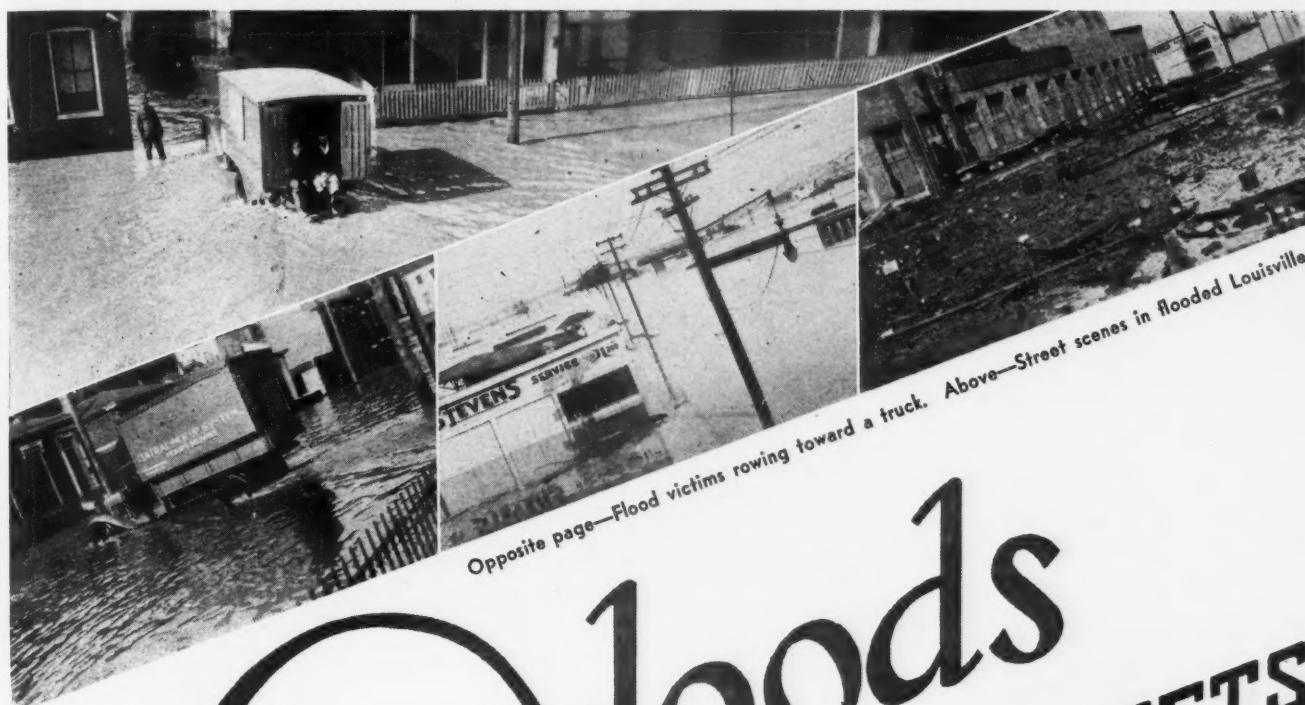
ON these facing pages is told the drama of the recent floods when the Ohio river and its tributaries overflowed their banks. The part trucks played in helping flood victims in and around Cincinnati is told here by Eyewitness Wilson, who is sales promotion manager for Trailmobile. On the opposite page is the story, told by Eyewitness Glass, member, Motor Truck Club of Kentucky, of the damaging effect floods had on fleets operating in and around Louisville, Ky., and what reconditioning was necessary to put those trucks back into the running.

IT might be called "Pennies from Heaven" in song, but, in actual fact, it was just an unseasonable excess volume of rainfall on the western watershed of the Appalachian Range that sent torrents of water into the already filled basin that is drained by America's great inland water system.

The net result: a flood of record-breaking proportions that tested, to the fullest extent, the facilities of all transportation systems that supply the daily needs of millions of people.

Many lives lost, thousands of pieces of freight-hauling equipment delayed or held up entirely, damage measured in millions of dollars—but the actual loss of truck freight in transit throughout the entire measure of nature's flood wrath was limited to only a few truck and trailer loads of freight.

Surprising as this fact might be, one trucking company after another, freight forwarders, brokers and haulers all up and down the valleys affected by the (TURN TO PAGE 50, PLEASE)



Opposite page—Flood victims rowing toward a truck. Above—Street scenes in flooded Louisville

AND Floods DID TO FLEETS

BY IRVIN L. GLASS, JR.

WHAT repairs are necessary to a tractor-trailer completely covered by river water for more than two weeks and to a light delivery truck which has crept through water covering the hubs many times in 10 days?

That's the long and short of problems that faced shop foremen and mechanics in Louisville and other cities after the muddy, grimy flood waters of the Ohio river slowly left the city streets.

Virtually none of the trucks in Louisville, Ky., escaped without some damage, even though it was only wet brakes. New or old, large or small, all were pressed into relief service. Many were marooned or stalled by rising water. With very little attention, the others were kept rolling, much of the time through water over the axles, during the two weeks that chaos gripped the flooded areas.

TRUCKS received the lion's share of credit for beating the river at its game of disease and death. But the river had a few tricks with which to hit back and

Louisville repair shops were filled for weeks with flood-damaged motor vehicles.

Not content with water damage, the river hid vehicles just below its surface, out of sight of motorboat operators. Tops, windows, windshields and bodies suffered from collision of boats while on errands of mercy. In other instances, heavy currents tossed boats against partly covered vehicles, denting fenders and bodies. Cost of repairs for this damage ranged from \$1.50 to \$35.00 per vehicle.

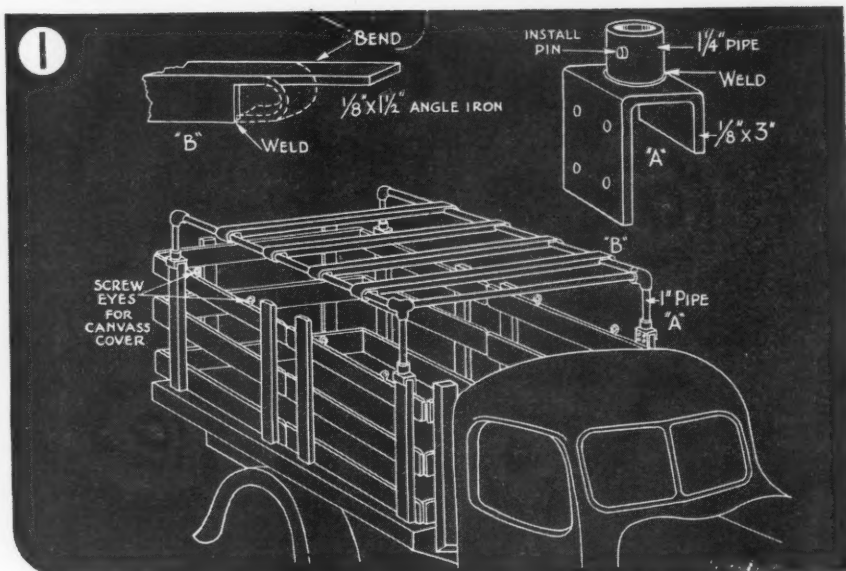
So varied were the results of havoc wrought to trucks by the enraged waters that any attempt to strike an average cost for repairs is impossible. In only a few cases were trucks trapped in garages. Most of those which did go under water were stranded while doing relief work. Consequently, only essential equipment was carried on the vehicles. Here are a few examples of the extremes in both damage and the methods of renovation:

(TURN TO PAGE 54, PLEASE)

TRUCKS that imbibed too freely of the Ohio-Mississippi cocktail had hangovers. Those that survived the bender were treated for the headache with the following remedies in the best bedside manner:

1. Fender and body work as a result of being struck by boats while submerged.
2. All wheel bearings repacked.
3. Transmissions flushed out or dis-assembled and cleaned.
4. Differentials flushed out or dis-assembled and cleaned.
5. Engines dis-assembled and wearing parts replaced.
6. Treated for rust and repainted.
7. Wooden floors and plywood sides replaced.
8. Electrical units dismantled and baked.
9. Coils and condensers replaced.
10. Brake linings replaced.
11. Clutch facings replaced.

Illustrations are of (1) Tarpaulin Rack, by Ed. Schultz, Abbotts Dairies, Inc., Philadelphia; (2) Fender Bracket, by P. R. Coleman, Rainy Wood Coke Co., Norristown, Pa.; (3) Driver Vision Test, by Clinton Brettell, R. H. Macy & Co., N. Y. C.; (4) Clearance Light, by Billie Burgan, Hage's Ice Cream Co., Ltd., San Diego, Cal.; (5) Gas Line Repair, by Harry Metz, Erie County Highway Dept., Penna.



1. Tarpaulin Rack

By ED. SCHULTZ,

Transportation Mgr., Ice Cream Division,
Abbotts Dairies, Inc., Philadelphia

UNTIL three years ago we had a great deal of trouble with tarpaulins getting dirty, torn or lost. Then we developed and started to install a tarpaulin rack, the framework of which was made of 1-in. pipe. The uprights were fastened to the uprights of a stake body. The drawing shows the details. The only feature not shown in the drawing is the metal strip that fastens the tarpaulin to the sliding angle irons. This is $\frac{1}{8}$ -in. by 1-in. strap iron drilled and fastened with $\frac{3}{16}$ -in. by $\frac{1}{2}$ -in. stove bolts. Two men can make and install rack and tarpaulin in 8 hours. In addition to eliminating our tarpaulin troubles this rigging made it possible for us to load from front, rear and overhead.

2. Fender Bracket

By PRESTON R. COLEMAN

Mechanic, Rainy Wood Coke Co.,
Norristown, Pa.

WE were having trouble with fender brackets breaking on 1931 N A Autocars. We tried several ways of reinforcing with no great success and then found a solution.

We took a straight length of $\frac{3}{4}$ -in. pipe, flattened it on the ends and drilled it so that it could be bolted to the regular bracket and the fender. One end had to be angled to fit the contour of the regular bracket where it curves over the wheel. This pipe did not interfere with the cutting of the wheels and it stopped the breakage just above the chassis frame.

Shop Hints

FROM FLEET SHOPS

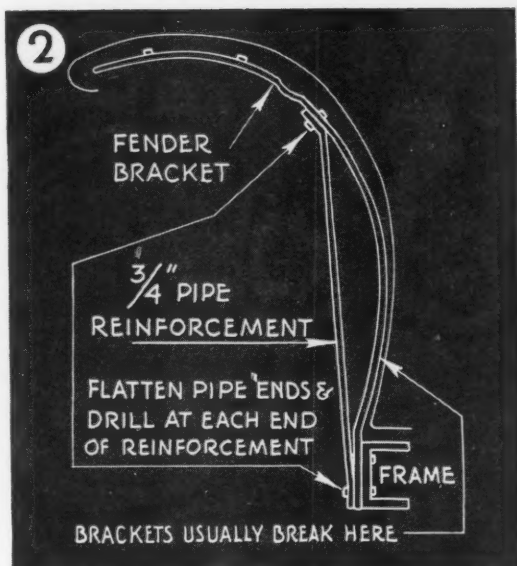
3. Driver Vision Test

By CLINTON BRETTELL

Supt. of Garages, R. H. Macy & Co.,
New York City

YOU can test the driver vision of any

vehicle by drawing a base line on the garage floor and labeling it "front bumper." The floor ahead of this line must be laid out in 1-ft. squares. Seat a man of average height in a relaxed driving position in the car with its bumper on the base line and he can



.. Will Be Paid by Commercial Car Journal for Each Shop Hint Accepted. Ideas Count—No Matter How Rough. We Will Polish Them Up for Publication.

observe the toe of a man moving from one side to the other in front of the driver. The man who walks must move in and out so that his toes are just visible to the driver. The walker's route may be chalked off and then transcribed to graph paper for permanent record. The graph illustrates some of our results with this method.

4. Clearance Light

By **BILLIE BURGAN**,
Hage's Ice Cream Co., Ltd.,
San Diego, Cal.

FREQUENT renewal of glass and
COMMERCIAL CAR JOURNAL
May, 1937

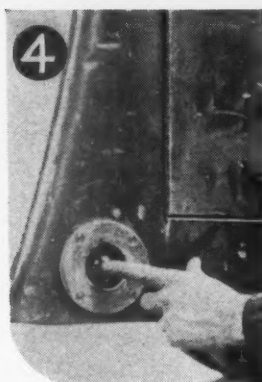
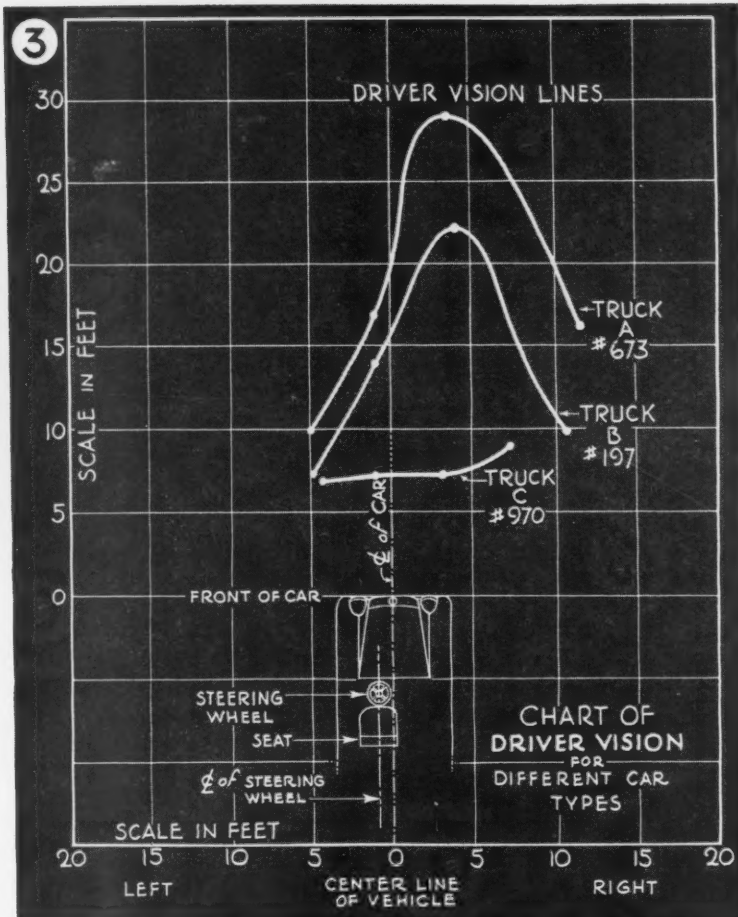
bulbs of clearance lights caused us to concentrate on some method of preventing breakage. We finally mounted our lights so that they protrude through a 2-in. flat washer. Brazed to the washer is a $\frac{5}{8}$ -in. piece of $2\frac{1}{2}$ -in. drive shaft tube. In its riding position a flexible 2-in. coil spring holds the light in place with the glass retainer flange resting against the inner edge of the tubing brazed to the washer. Any obstruction as indicated in the illustration pushes the light inward and no harm is done. Working space for the light is cut in the main bottom side member with a pocket for the spring back of that. The whole assem-

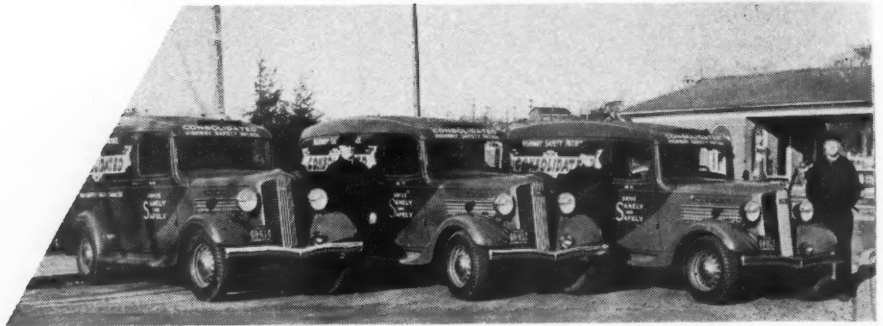
bly occupies 3 in. and the glass protrudes $\frac{3}{4}$ -in.

5. Gas Line Repair

By **HARRY METZ**,
Mechanic, Erie County Highway Dept.,
Penna.

TO repair a leak in a gas line or other copper tubing we have found the following method satisfactory. Tin the tubing with solder for about $\frac{3}{4}$ in. of its length at the hole. Wrap the tubing for $\frac{3}{4}$ in. with brass wire winding carefully. Solder again over the wire and the leak will not trouble you again.





**FLEET
SAFETY**

Patrol

PICKETS INSURANCE COSTS



IT must be something in the air they breathe or in the water they drink at Hartford, Conn., that makes people want to go into the insurance business. The Arbours, father and son, operated a trucking business for many years, as a matter of fact, from 1903 when Joseph Arbour, the father, drove a lead team and trained two other driverless teams to follow the route from St. Velliere to St. Raphael back from the railroad in Canada, without feeling the lure of the insurance business. A goodly span of years in New Britain, Conn., did not arouse any desire to gamble with their money against accidents. But in 1930 the Consolidated Motor Lines, Inc., an outgrowth of the original Arbour enterprise, moved its headquarters to Hartford. It did not take long for the Arbours to succumb to the call and Con-

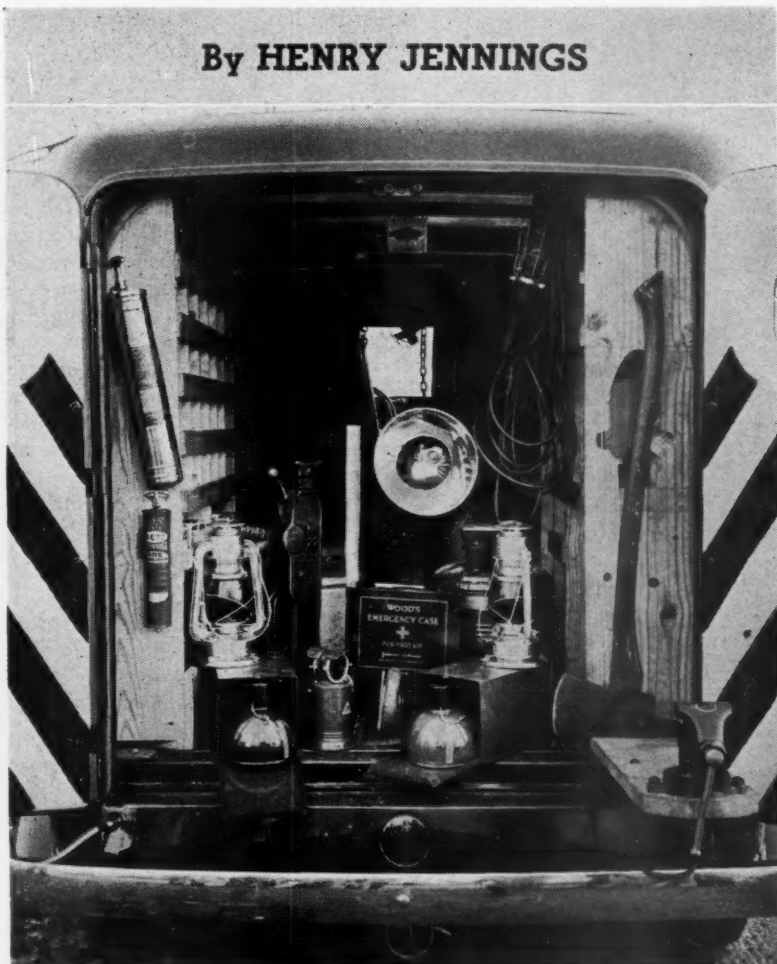
THE facts in this story are given to indicate how one operator who handled his own insurance went about the problem of effecting safer operation. The facts are interesting in themselves and are presented for that reason alone. It should be stated that recently the Interstate Commerce Commission denied this particular operator the right to self insure on the ground that "applicants' resources are not sufficient."

solidated went into the insurance business and has been in it for three years. Consolidated insures the 300 trucks

which the company operates and carries the compensation insurance on the 650 people which it employs. This healthy little business makes a handsome net profit right in the shadow of some of the biggest insurance company headquarters in the world. If you have enough gall, and this reporter did, to ask one of the Consolidated officials how much money they made by being in the insurance business last year he might tell you. One of them told this reporter, but asked him not to print the amount. It is enough to make you think, I assure you. The amount of profit is determined by having the operating department pay the insurance department regular quoted premiums and then if the insurance department operates for less than this amount it has made a profit. If it uses up more money than this amount, it is in the red. The Consolidated insurance department has never been in the red.

Consolidated's Special Highway Police Extend Long Arm of Supervision Over All Routes at All Times Preventing Rule Violations and Supplying Emergency Equipment to Keep Freight on the Go

By HENRY JENNINGS

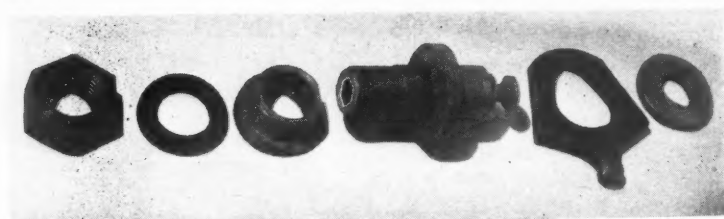


NATURALLY the best way to make money in the insurance business is to handle only the very best risks. That is, trucks and people who have the fewest accidents. So Consolidated started out to make itself the very best risk possible. The net profit indicates that it did a thorough job. Another factor that has a great influence on the ledger figures is the manner in which accident adjustments are handled. The insurance department at Consolidated seems to be pretty smooth at both preventing accidents and negotiating settlement when an accident does occur.

All of the insurance work is headed up by David Scheckter, an insurance manager with some 15 years of transportation insurance experience behind him and who operates from the Hartford headquarters. He is, among other things, a trained adjuster and two other adjusters are on his staff. The manager handles the accidents that occur between Bridgeport, Conn., and Hartford, Conn., while another adjuster operates between New York and Bridgeport and a third covers the territory from Springfield to Boston and Worcester. They are on call 24 hours a day and immediately upon being advised of an accident they start for the scene, where they take pictures and compile the evidence that only

(TURN TO PAGE 82, PLEASE)

Left—Interior view of a patrol truck showing the emergency equipment available. Opposite page—The emergency patrol is on the scene of a breakdown within 20 minutes and uses acetylene torches for light at night. Consolidated's highway patrol fleet is shown at top of page



Left—Details of the eccentric anchor. Fig. 1 & 2 are explained in the story

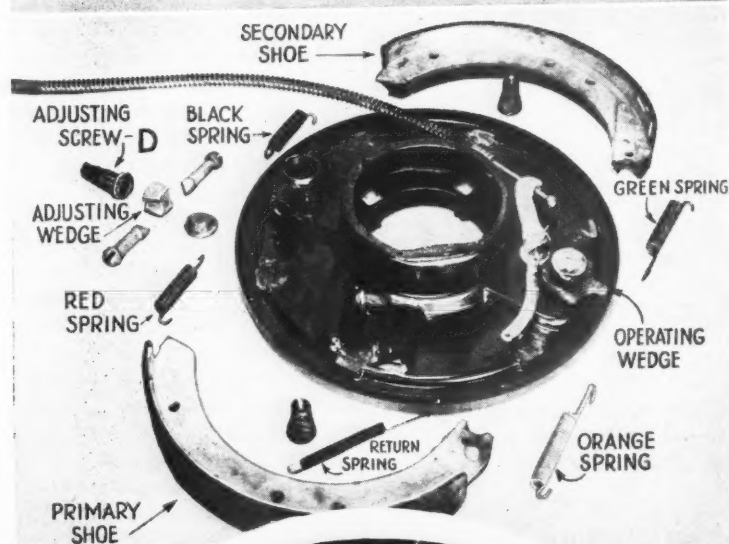


Fig. 2

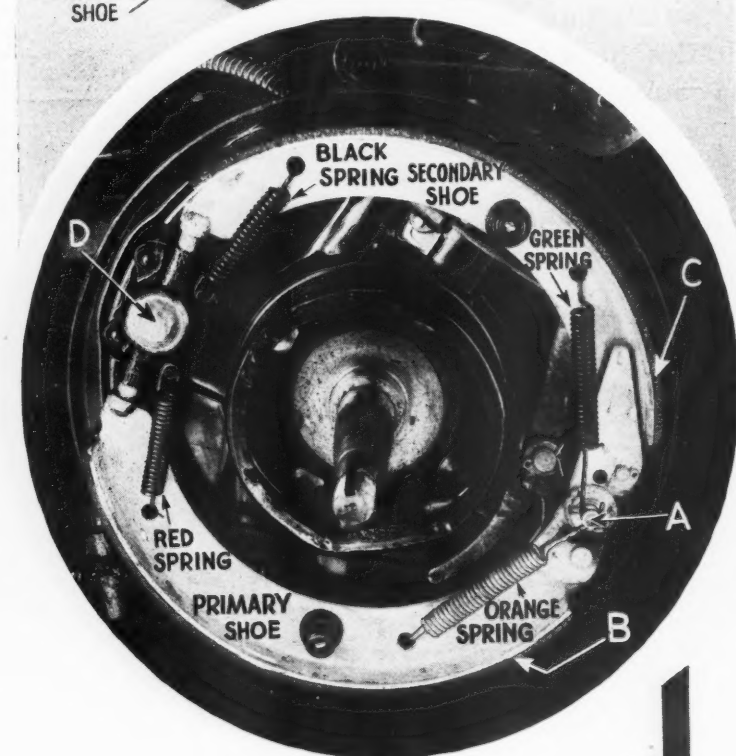


Fig. 1

THE 1937 Ford passenger cars and commercial cars are equipped with cable-operated brakes of Ford design. The brakes are a two-shoe brake adjustable at the top by means of an adjusting screw which operates a tapered adjusting wedge and at the bottom by an eccentric anchor pin which fits in a bushing which can be moved up or down in a backing plate slot. The manufacturer recommends that when the anchor needs adjustment that the brake shoe and backing plate assembly be exchanged for a factory-adjusted assembly, so consequently there is no factory procedure for a major brake adjustment on this type of brake.

For fleets who wish to make a complete adjustment of the brakes the following procedure is suggested in the absence of factory recommendations:

1. Jack up all four wheels and release hand brake.
2. Test front wheel and king pin looseness.
3. Check spring shackle studs, shock absorber links and front radius rod mountings for wear or looseness.
4. Disconnect brake cables at cross shaft. Loosen anchor lock nut. A (Fig. 1).
5. Insert plug wrench in anchor pin and with wheel rotating turn wrench left or right until slight drag is felt on wheel. Turn wrench opposite direction until drag is felt and then set eccentric midway between. The lining clearance at B should be the same as C. (Fig. 1.)
6. Remove wheel, making sure that eccentric adjustment does not change relative right to left position. Insert a 12-in. strip of .005-in. shim stock between brake drum and brake shoes at the anchor, and reinstall wheel.
7. Still making sure that eccentric at anchor does not change, run adjusting screw "D" in, until shoes are expanded in drums.

(TURN TO PAGE 58, PLEASE)

FORD Brake ADJUSTMENT

... for 1937 Passenger and Commercial Cars in 14 Simplified Operations Developed by Chilton Technical Editors

Trends IN TRUCK DESIGN

Are Towards the Use of Automatic Valve Lifters, Better Balanced Crankshafts, Fuel Economy, Longer Engine Life, Superchargers and Smaller Engines

GONE with the wind is the familiar old-time truck whose only mission in life was to haul goods. The truck of today and tomorrow—no matter what its size—has to look good and do the job still better.

Call it streamlining or what have you, the truck of today and tomorrow has IT in styling and in color. It started with the small commercial jobs that were styled the same as their passenger car cousins and then it spread to the big brothers right up to the largest ratings on the market. When it comes to the real big jobs, they've done the smart thing by using modern styling but scaling it up so it's in harmony with your idea of how a big, rugged truck should be dressed.

From now on the big push in truck bodies is to all-metal construction. Most cabs already feature all-metal construction and the same is true of pick-up bodies and panel jobs. For the big bodies, we may see a growing use of materials that give great strength coupled with lower weight so as to increase the payload and thus bring more revenue. To this end we should see more and more aluminum, Dowmetal, and the high-tensile stainless steel alloys. And right along that line it shouldn't be surprising to see the use of tubular body frames of all-welded construction. In fact some of the big bus bodies already have been playing with the idea.

You can remember that it was only
(TURN TO PAGE 58, PLEASE)

Illustrations at right (top down) show supercharger mounted on engine designed to get more power out of a smaller engine; the automatic hydraulic valve lifter is designed to improve performance; better balanced crankshaft with vibration damper on front end, as shown



A Tale of Trucks In

Hollywood

Or "Through Thick and Thin for the Talkies"

Trucks Roam the Ranges and Cross Mountains and Roadless Wastes Transporting Scenery and Actors Hundreds of Miles to Suitable Locations So That Hollywood Movie Makers May Create Drama for All

By **ART KLEIN**, Director of Mechanical Division,
Warner Bros. & First National West Coast Studio

NOWHERE in this motorized world exists the variety and action, the "git up and git" which characterizes transportation in motion pictures. This factor makes our operation appear hectic and inchoate to the onlooker. Trucks and cars roll in and out, requisition orders for transportation arrive—sometimes at the rate of two a minute—and from the general appearance one would say that the ants could learn a thing or two by studying transport in Hollywood. Yet, to movie-makers, transportation is merely an every-day phase in picture shooting, albeit a most important part of the business.

From story inception to finished film transport enters into the job of creating drama for everybody. Transport hauls writers and artists, scenery and stars, and it is doubtful if the industry could have grown into today's giant without the benefit of economical, but complete and rapid transportation.

Visitors to Warner Brothers-First

National's lots are always interested in knowing the "inside story" of picture making. When they are engaged in some branch of the automotive industry they gravitate to our department and put us on the witness stand. That is how this story came to be written, and to **COMMERCIAL CAR JOURNAL** goes the credit for bringing this phase of picture making to you of the two-billion dollar trucking industry.

We like big figures out here in Hol-



Illustrations show different uses to which truck equipment is put. At left is a fleet of Warner trucks and a Paramount movie car. Top of opposite page shows a Paramount movie fleet on location hundreds of miles from the studio. Other photos show a bus in which the actors ride, a wayside refueling station and a scene from 20th Century-Fox's "Ramona" transported to location by truck.

COMMERCIAL CAR JOURNAL
May, 1937



lywood—mostly because we deal in them. Before taking up maintenance procedure and haulage problems it will first be interesting to demonstrate just what part we play in that two-billion dollar truck figure. This can best be done by enumerating motorized equipment at Warner Bros. to give some idea of the diversity of operations.

We operate 91 passenger cars of late models; 5 cars of the vintage of 1900 known as "atmosphere" cars; 16 sound trucks; 4 camera trucks; 11 six-wheel units; 94 trucks of varying sizes and types; 12 tractors; 26 trailers; 9 buses and taxis; and an assortment of maintenance equipment including fire trucks, ambulances, street sweepers,

etc. The fleet total is 287 motorized units.

There are two reasons why our equipment cannot be standardized, why it is necessary for us to have nineteen different makes of automobiles (not counting the old-timers) and thirteen different makes of trucks—not counting miscellaneous equipment. First, and most important, our units appear in pictures as well as take care of transporting them. Second, the world is our market; therefore we practise

(TURN TO PAGE 67, PLEASE)



SAVING
\$125,000
 On Maintenance In 5 Years



TO centralize or not to centralize is no longer a problem as far as the Waterloo, Iowa, division of the Mid-Continent Petroleum Corp., is concerned. The decision to centralize the shop and undertake to do our own repairs, major as well as minor, was made in 1930 in the face of evidence that the then current practice of doing some of the maintenance work in our own shop and farming out the work of outlying operations was not a paying proposition.

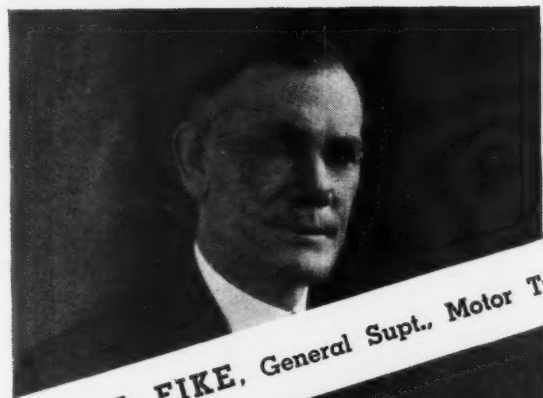
Our former method of maintenance did not pay to the tune of \$25,000 which

represents, approximately, over a period of years, the savings in operating costs which we have enjoyed yearly since the repair shop was centralized and repair procedure reorganized. Over a period of five years this is \$125,000.

This sizable saving, which is not to be sniffed at in any man's fleet, is the

outgrowth of the following methods of operation:

- (1) Centralized shop.
- (2) Traveling mechanic.
- (3) Merit and demerit system on maintenance and inspections.
- (4) Governors; engines and gas analyzers.



By R. J. FIKE, General Supt., Motor Transport Dept., Mid-Continent Petroleum Corp., Tulsa, Okla.

Operating Program of (1) Centralized Shop; (2) Traveling Mechanic; (3) Merit and Demerit System; (4) Governors, Tune-Up Equipment and Gas Analyzers Saved \$25,000 Yearly

Mid-Continent Petroleum Corporation
Motor Transport Department
MOTOR VEHICLE INSPECTION REPORT

Driver's Name: _____ Location: _____ Date: _____
Vehicle No.: _____ Make: _____ Model: _____ Year: _____
Division: _____

Inspected	Condition of	Grade	Inspected	Condition of	Grade
Engine	Oil Level	Good	Water Level	Good	Good
Belts	Properly Adjusted	Good	Headlights	Properly Adjusted	Good
Brakes	Properly Adjusted	Good	Tires	Properly Adjusted	Good
Clutch	Properly Adjusted	Good	Chassis	Properly Adjusted	Good
Exhaust	Properly Adjusted	Good	Electrical	Properly Adjusted	Good
Ignition	Properly Adjusted	Good	Paint	Properly Adjusted	Good
Steering	Properly Adjusted	Good	Body	Properly Adjusted	Good
Transmission	Properly Adjusted	Good	Interior	Properly Adjusted	Good
Drive Shaft	Properly Adjusted	Good	Exterior	Properly Adjusted	Good
Universal Joint	Properly Adjusted	Good	Engine	Properly Adjusted	Good
Propeller Shaft	Properly Adjusted	Good	Water Level	Properly Adjusted	Good
Brake Pedal	Properly Adjusted	Good	Headlights	Properly Adjusted	Good
Clutch Pedal	Properly Adjusted	Good	Tires	Properly Adjusted	Good
Exhaust	Properly Adjusted	Good	Chassis	Properly Adjusted	Good
Ignition	Properly Adjusted	Good	Electrical	Properly Adjusted	Good
Steering	Properly Adjusted	Good	Paint	Properly Adjusted	Good
Transmission	Properly Adjusted	Good	Body	Properly Adjusted	Good
Drive Shaft	Properly Adjusted	Good	Interior	Properly Adjusted	Good
Universal Joint	Properly Adjusted	Good	Exterior	Properly Adjusted	Good
Propeller Shaft	Properly Adjusted	Good	Engine	Properly Adjusted	Good
Brake Pedal	Properly Adjusted	Good	Water Level	Properly Adjusted	Good
Clutch Pedal	Properly Adjusted	Good	Headlights	Properly Adjusted	Good
Exhaust	Properly Adjusted	Good	Tires	Properly Adjusted	Good
Ignition	Properly Adjusted	Good	Chassis	Properly Adjusted	Good
Steering	Properly Adjusted	Good	Electrical	Properly Adjusted	Good
Transmission	Properly Adjusted	Good	Paint	Properly Adjusted	Good
Drive Shaft	Properly Adjusted	Good	Body	Properly Adjusted	Good
Universal Joint	Properly Adjusted	Good	Interior	Properly Adjusted	Good
Propeller Shaft	Properly Adjusted	Good	Exterior	Properly Adjusted	Good

Report forms at the left are those made out by the traveling mechanic monthly (top) and the truck driver (bottom). Illustrations on the opposite page are of Mid-Continent's Waterloo shop and equipment. A tank truck is being given the once-over

became the traveling mechanic's job to service and repair these trucks and this automatically deprived local dealers and repair shops of a portion of the work they formerly enjoyed. The result was a lack of cooperation on the part of the driver-salesman who feared that they in turn would lose the particular dealer or repair shop as a customer for Mid-Continent's petroleum products. Their lack of cooperation resulted in poor servicing, road failures and neglect of necessary repairs. However, to offset past reciprocal relations, cooperation of driver-salesmen and dealers was obtained by arranging to trade in their vehicles with dealers in their particular localities when the time arrived for replacement with new equipment. This arrangement has worked to everyone's satisfaction.

But before the full significance of the maintenance methods in practice today can be realized, some idea of our former methods would serve as a basis for comparison in emphasizing the value of the changes made.

Under the program of the centralized shop and traveling mechanic, trucks come into Waterloo for complete major overhaul and painting when the traveling mechanic's inspection reports show that the condition of truck warrants it. We use utility relief trucks while this work is done—two utility trucks have been found sufficient in our fleet. At our central shop we are equipped to do a complete overhaul job and have for that purpose all necessary equipment. Here local trucks are checked and serviced weekly. A thorough inspection is made once a month and includes going over the entire truck or car.

OUR 95 company trucks and 200 privately owned trucks cover all of Iowa, northern Illinois, southern Wisconsin, and southern Minnesota. It was the practice to service and repair all trucks operating locally in Waterloo, Iowa, and to farm out the work on trucks operating in the other states and in western Iowa. We had to rely on mailed reports on the type of work and the extent to which it had to be done. The job of caring for trucks belonged to each truck's salesman-driver. It was up to these men to see that the trucks were properly serviced, that repairs were made when needed, that the truck was kept tuned and running on the highways. With the change in maintenance methods, it

THE problem of maintenance and repair is more complicated with the traveling mechanic than it would be if we could bring outlying trucks into the central shop at regular monthly periods. However, the practice we have worked out has proved satisfactory and is greatly responsible for the savings in operating costs. In the matter of (TURN TO PAGE 78, PLEASE)

Mid-Continent Petroleum Corporation
MOTOR VEHICLE MONTHLY OPERATING REPORT

Co. No. _____ Allowance Car No. _____

Month Ending _____, 193__

Make of Car _____ Body Type _____ Year _____

Where Used _____ Kind of work _____

No. of Working Days Operated During Month _____

No. Times Completely Greased During Month _____

" " Crank Case Oil Changed " " _____

" " Water Put in Battery " " _____

No. New Tires During Month _____

" " Tubes During Month _____

	From Co. Pumps	Purchased Outside	Total
No. Gallons Gasoline Used			
No. Quarts Oil Used			
Speedometer at Close This Month			
" " " Last " "			
Total Miles During Month			

	Speedometer Miles
For Car Allowance	
Operator Only	
Total Co. Miles	
Per Expense Book	

General Condition of Car: _____

Driven By _____

Mail Address _____

This Report must be filled in on the last day of each month by every Co. Car and truck operator and operators of allowance cars and mailed to Division Office.

CRANKCASE SOLIDS ARE A TIP-OFF ON

Oil Change

Texas Fleet Trips the Oil Pan When Centrifuge Tests Show Presence of Foreign Matter is 1 Per Cent; Scientifically Determined Change Periods Save Engine Wear

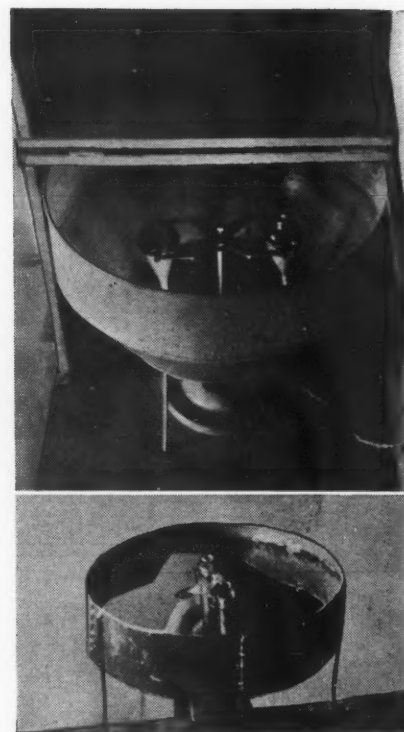


WHEN main and connecting rod bearings, pistons, cylinders and especially piston rings of 40 trucks operated by a crude oil producing company in the Texas oil fields continued to show much greater wear than was considered standard for the mileage covered, the fleet operator decided to discontinue speedometer readings as a basis for changing the crankcase oil. The trucks are engaged in severe service—21 of them being equipped with winches and wire cable for speeding up work that would otherwise be held over for a tractor.

Obviously a substitute for speedom-

eter readings had to be found that would give a more accurate indication of the condition of the oil in the crankcase. Viscosity tests were quickly discarded even though they are considered accurate indicators of the lubricating quality of the oil. The reason for discarding this idea was that involved in the tests is much of the personal factor of the man making the tests and the temperature.

The amount of foreign matter carried in the oil was finally settled upon as being a measure of the lubricating value still remaining in any sample of crankcase oil. To measure the amount



By ELTON STERRETT

Illustrations above are of the centrifuge units for shop use to separate solids from crankcase oil. The lower one is the old hand operated unit. The unit on top is the motor driven centrifuge. Left—Fleetman Sterrett takes a squint at the condition of his crankcase oil

of foreign matter a used hand operated centrifuge was purchased which cost \$15. The amount of carbon, metal particles and other foreign matter which showed up in crankcase draining tests was so surprising that a new electric centrifuge using larger and more readable and cleaned glasses was obtained. This equipment cost about \$80.

TO obtain data upon which some schedule of crankcase oil tests might be founded, two 3-ton trucks were selected showing speedometer readings of 13,462 and 15,441 miles respectively. Both trucks were equipped with engine driven winches which were in service only for handling freight on and off the trucks and for occasional first-aid
(TURN TO PAGE 64, PLEASE)

THE MENACE of



By H. B. LINDSAY*

Moisture

IN REFRIGERATED BODIES
May be Sealed Effectively by Fleetmen Who Follow Advice Given Here for Treating Refrigerated Bodies That Run Temperatures

OCCASIONALLY a freight line or private operator discovers his refrigerated bodies are beginning to require more ice or CO₂, or are failing to maintain low enough temperatures. When he investigates, it is discovered that water had collected inside the walls and floors of the trucks. The insulation is soaking wet and its heat-stopping value almost entirely destroyed.

The old insulation is torn out and new insulation installed at considerable expense. The consumption of refrigerant returns to normal and proper temperatures again are maintained without difficulty.

The presence of water in these bodies is no accident. Neither is it the result of leakage of rain through the roof and walls, nor leakage from inside the body, nor the result of splashes from highway puddles. For practical purposes, the bodies are usually watertight.

Yet the moisture gets in there just the same, just as it penetrates into thousands of other refrigerated bodies. It enters in the form of water vapor, and there is no practical way of keeping it out entirely.

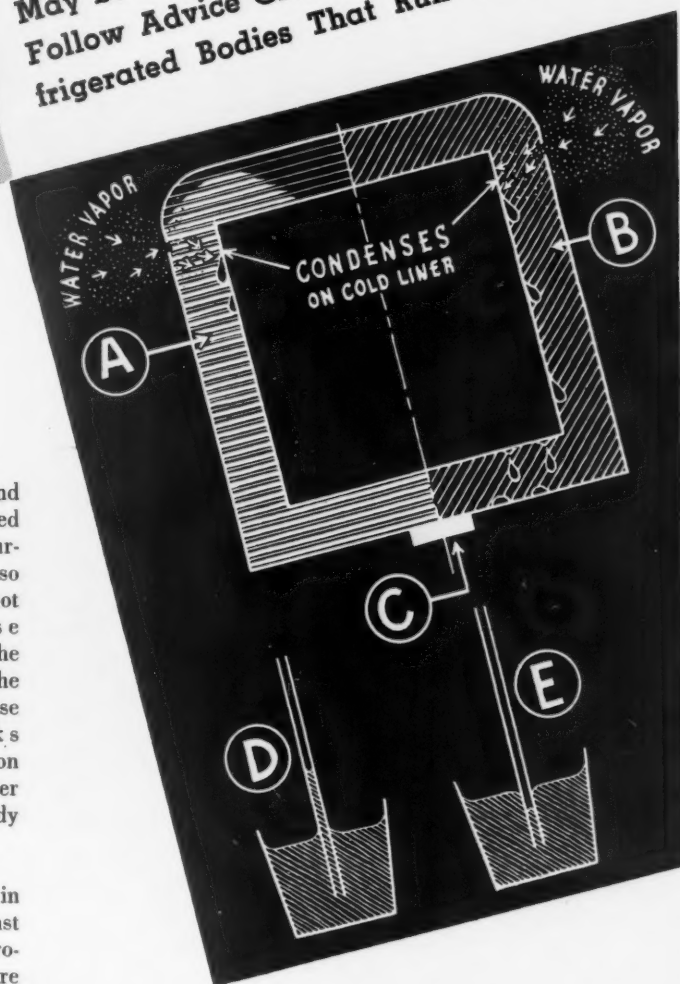
The damage done by water vapor can

be minimized and even eliminated for practical purposes. To do so is important, not only because moisture ruins the efficiency of the body, but because it also wreaks physical havoc on framing and other parts of the body structure.

THE first step in the fight against moisture is to provide a moisture seal between the insulation and the outer air. The second is to use an insulating material that does not absorb moisture.

The application of a moisture seal appears simple, but in actual practice it can be obtained only by careful workmanship. Even then the seal will not be perfect. The reason for this will be obvious when it is explained that even though the outer surfaces of roof, walls

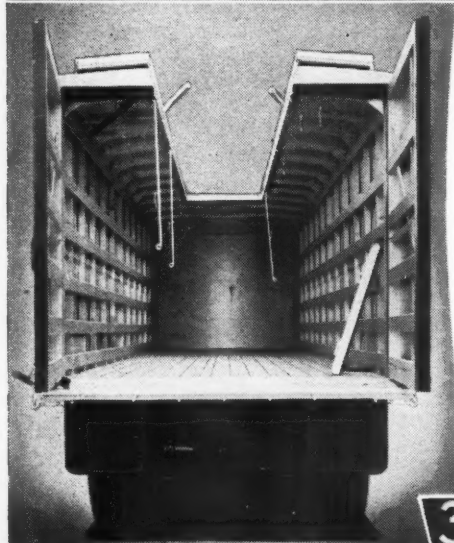
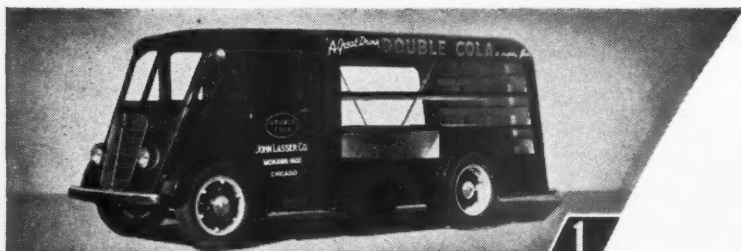
(TURN TO PAGE 72, PLEASE)



Top—Explanation of this drawing is as follows: (A) Hygroscopic insulation absorbs moisture as it condenses—insulation becomes wet and loses its heat-stopping value; (B) This device removes water which collects inside the floor without letting any outside moisture enter but it will not work if insulation absorbs moisture instead of letting it drip to the floor; (C) Non-hygroscopic insulation repels moisture, which drips to bottom of body—insulation stays dry and efficient. Above—D & E are examples of capillary attraction discussed in the article

* President, Dry-Zero Corp.

COMMERCIAL CAR JOURNAL
MAY, 1937



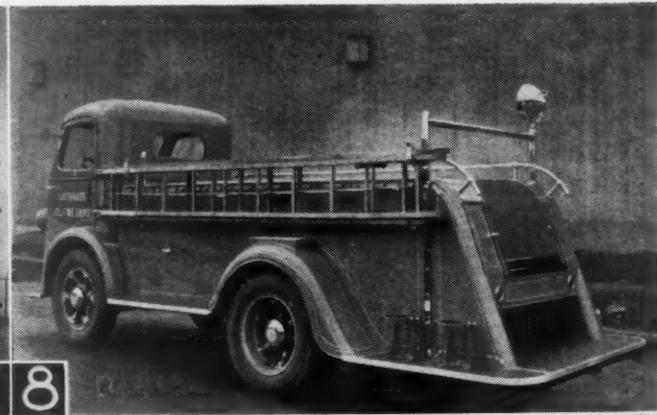
THE

Album

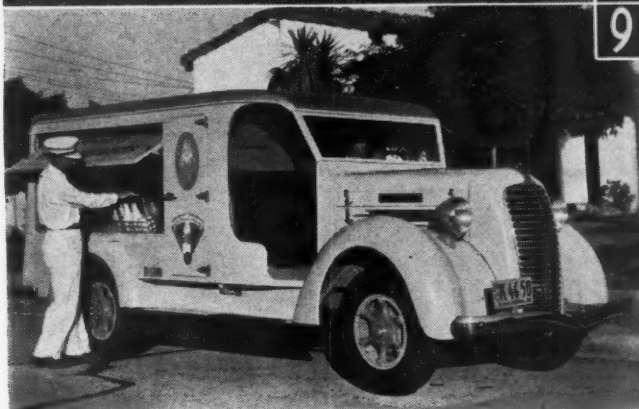
of Modern Truck Transportation Equipment

1. THERE'S no double for this AVAILABLE truck operated by Double Cola for the thirsty (water wagon species). This is a Model P 107 powered with a six-cylinder engine. The bottler's body is built to tote—we don't know how many cases, but it looks roomy anyway, with extra space gained from the cab-over-engine design.
2. THIS sliding door at the rear of the truck is the nearest thing to a zipper door for quick action, and the newsboys don't lose any time in handling their papers. It was designed by Studebaker and the Daily Star of Toronto. The body is mounted on a cab-forward STUDEBAKER chassis of 101-in. wheelbase sporting chromium front-end accessories. Note collapsible step.
3. HIGHWAY built this special trailer body with hinged doors in the roof for loading purposes. Handles fastened to the hinged sections facilitate their opening and closing, and once down, they may be locked closed. Rear doors open full length and width.
4. AUTOCARS are standard equipment for Hohenadel Brewery, Philadelphia, delivering draft beer to thirsty customers. The beer body is





7	8
9	10



of special design and simulates a refrigerated body in appearance. It has a capacity of 28 half barrels of beer on the floor and 28 more half barrels on the top deck. Bow lines and tarpaulin are used in the summer to keep off the sun. Body by Finnessey.

5. DODGE is Johnny-on-the-spot when Crane Co. has some heavy hauling to do. Here you see one of a whole fleet rigged out with a special body for hauling pipes and other plumbing equipment. Note special brackets mounted on the side of cab and fender to support pipes protruding through front of the body.

6. WHITE just couldn't refuse when the New York City department of sanitation ordered 100 of these heavy-duty model 818 cab-over-engine trucks, so here you see one sporting its new refuse body which is New York's latest for sanitary and efficient collection. Chassis wheelbase is 121 in.

7. TO FEDERAL AND KENTUCKY TRAILER CO. go credit for this splendid tractor semi-trailer combination designed and finished for the Ingersoll Steel & Disc Co. The drop-frame trailer measures 28½ ft. long, 12 ft. 4 in. high and 8 ft. wide. Federal tractor is a model 75 C-O-E of 1½-2½ tons with a wheelbase of 120 in. and standard cab No. 71. The lettering was specially cut and fastened to the trailer panels.

8. BODE-FINN, INC., built this classy fire wagon on an INTERNATIONAL cab-over-engine chassis Model C-300 with a 99-in. wheelbase. The body is 144 in. long, and 60¼ in. wide outside. It boasts 14-in. compartments and chrome plate hardware and fittings.

9. DIAMOND T adds a bit of that "peaches and cream" complexion to the milk delivery business with this nifty ¾-ton model 80, custom built for Edgemar Farms. Note that milk is extracted (in bottles) from the side by quickly lifting the large side door. Note there are no doors to the cab.

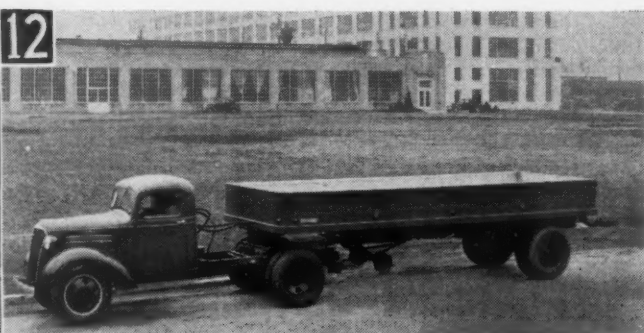
10. THIS MACK TRAFFIC TYPE truck is operated by the State of Pennsylvania for checking its highway scales against possible error. Heavy scale weights are carried in the body which are lifted out and replaced by the crane which you see.

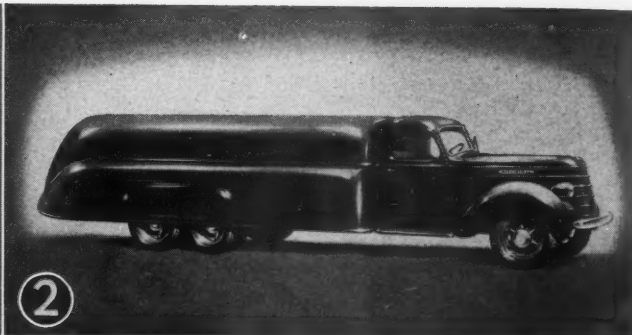
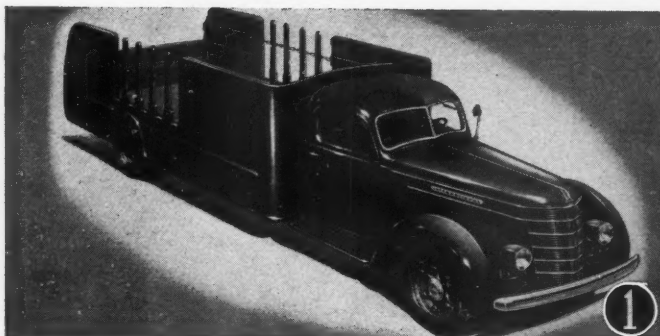
11. A REO model 2D4M cab-over-engine chassis hides under this roomy furniture body. The truck is operated by Helmly and offers plenty of space for its daily loads. Note the width of cab and drop sides of the body.

12. TRAILER CO. OF AMERICA built this special Trail-mobile trailer model H41 for toting steel plates from mill to customer. Body is smooth panel auto body steel lined with oak. Side frame is all-welded and the trailer's capacity is 10 tons. It is powered by a CHEVROLET tractor.



11	12
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D LINE OF



International

THE International Harvester Co. has completely redesigned its line of 1937 trucks, giving to all of the 26 new models a completely new appearance characterized by smart styling. There is no resemblance between the old "C" line and the new "D," the new models not having undergone a mere face-lifting operation but boast a complete creation process with particularly successful results. In addition to the new styling the line was mechanically redesigned so that operation and adaptability would keep pace with styling. Brief specifications of the line are shown in tabular form herewith.

There are 77 standard wheelbases in the 26 models ranging in capacities from 4400 to 62,000 lb. Included are nine six-wheel models, four of these having driving third axles and six having trailing third axles. Four models have two-speed axles. One of these also has a

IS A HARVEST OF "IT"

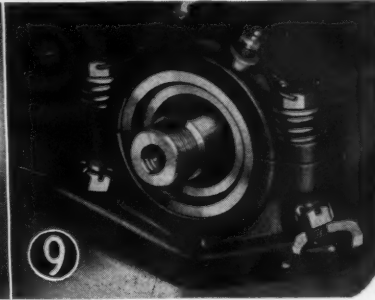
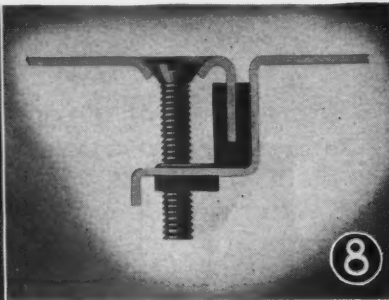
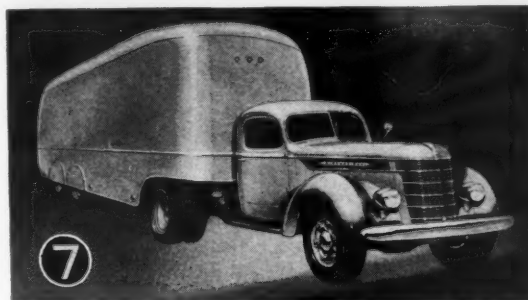
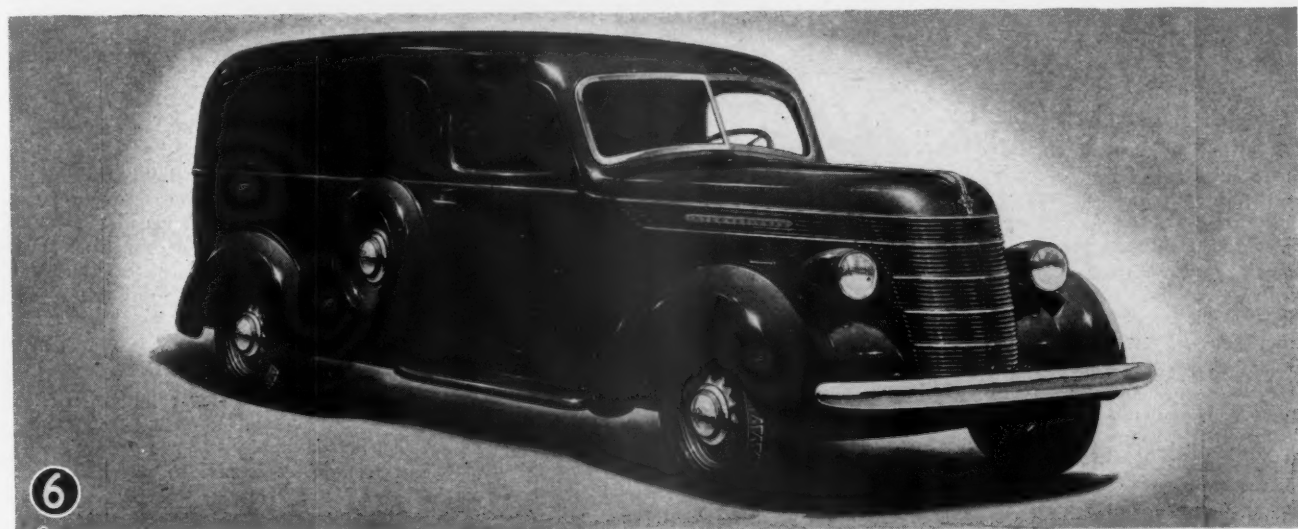
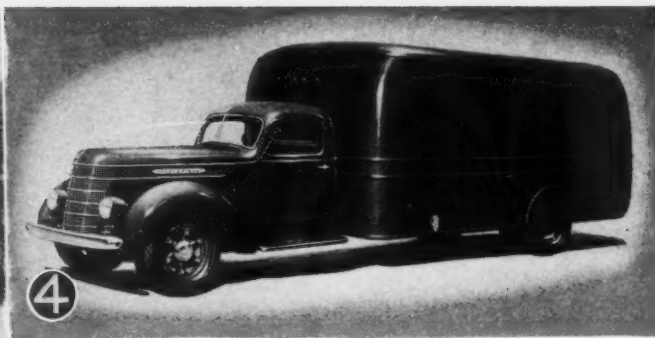
**Nifty Styling and Mechanical Improvements Feature
26 New Models Ranging in Capacities From 4400 to
62,000 lb. and Available in 77 Standard Wheelbases**

trailing third axle and one of them is one of the two cab-over-engine models.

All models have deeper, heavier frames than previously and more powerful hydraulic two-shoe brakes. Clutch and transmission torque capacities have been increased to match the greater torque of the engines. Front-end capacities have been increased to provide for carrying a greater proportion of the

load. CA dimension has been increased in most cases and gross weight is distributed to better advantage. Helical gear transmissions are used on the larger models with five forward speeds, the fourth speed being direct and the fifth an overdrive.

Vacuum-suspended boosters are standard equipment on some of the larger models while air brakes are equipment



Illustrations of the new International "D" line show (1) Model 60 with chain-stake body of special streamline design; (2) Six-wheelers for gasoline tank-truck service. Note the flow of lines; (3) Half-ton Model D-2 with pick-up body available in 113 and 125-in. wheelbases; (4) This unit is available with spiral bevel gear drive—Model D-60—and with double reduction drive—Model DR-60; (5) Cab is built for comfort and convenience, is insulated and lined and is de luxe equipped; (6) De luxe panel body is IHC's smartest. Body side panels are low and running boards short; (7) Model D-50 tractor with all-steel cab and adjustable V windshield; (8) New Type toe and floor board seal; (9) Trunnion bearings are spring mounted on Models D-50, D-60, DR-60 and DR-70

on the DR-70 and the larger six-wheel trucks. Air brakes are available on the intermediate sized models at extra cost. All models except the half-ton jobs have full floating axles. Needle bearing universal joints are used.

Cabs are of the welded all-steel construction, well insulated. The windshields are of the sloping Vee ventilating type. Cabs are larger and more roomy and the doors are wider to provide easier entrance and exit. Seats are deeply upholstered and are adjustable with adjustable back cushions. Cabs

are, of course, closely tied in with the styling and these are designed symmetrical with the new sweeping fenders and the horizontal louvre lines. Floorboards are anchored in a rubber channel to prevent noise.

TWO general designs of engine are employed for this new truck line, the L-head type, which powers trucks of 1½-ton rating and less, and the valve-in-head type, which powers all trucks from 2 tons load rating up. The L-head engine on the ½- and ¾-ton models has

a piston displacement of 213 cu. in., while that on the 1½-ton model has a displacement of 232 cu. in. Features of these engines include counter-balanced crankshafts, replaceable shell bearings, full-pressure lubrication, hardened exhaust-valve-seat inserts, downdraft carburetion, mechanical fuel pumps, and oil-bath-type air cleaners. With one exception, all of the engines used are of six-cylinder design.

Types FA and FB, which power the larger models, are of the valve-in-head type.

These engines have replaceable cylinder liners, counter-balanced crankshafts with vibration dampers, full pressure lubrication, replaceable main and connecting-rod bearings, hardened exhaust-valve-seat inserts, downdraft carburetion, oil-bath-type air cleaners, and fan-cooled generators.

(TURN TO PAGE 95, PLEASE)

New Products

ON PARADE



Diesel Fuel Dehydrator

A MEANS of combating acid and water in fuel oils has been developed by the Cunningham Co., 4252 Santa Monica Blvd., Los Angeles. The need for such a unit was based on the service problems of diesel operators caused by sulphur and water, present in most fuel oils, attacking the closely machined portions of the fuel pumps and injection nozzles. The Cunningham fuel dehydrator is designed for elimination of moisture and acid, and protect these parts.

The fuel dehydrator is placed between the fuel tanks and the fuel pumps. The principle on which it operates is comparable to the action of a battery in that the unit contains five different metallic elements which the acid and moisture attack, and thus dissipate themselves. The result is that a fuel going into the dehydrator will contain acid and moisture, but when it leaves the unit, it is free from them.

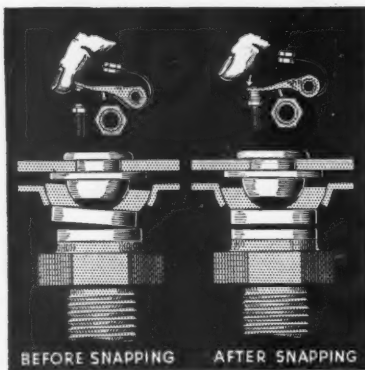


Cunningham fuel dehydrator

Improved Contact Points

THE Ives Engineering Laboratories, 2400 West Madison St., Chicago, has developed an improvement in ignition contact points so that now the tungsten point is on a self-aligning ball and socket swivel. This assures full contact over its entire double sized area.

In this feature the area in contact is immediately 6 to 8 times greater than on the usual rigidly welded tungsten point.

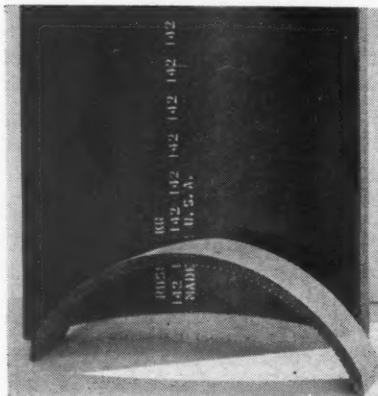


Ives ignition contact points

Slab Stock Lining

THE Russell Mfg. Co., Middletown, Conn., is now supplying a full molded, wire-back slab stock lining in 17 sizes to service all bus and truck installations in $\frac{1}{4}$ in., $\frac{3}{16}$ in. and $\frac{1}{2}$ in. thicknesses in all drum ranges.

Rusco slab stock lining



Electric Fuel Pump

A NEW 10th Anniversary Autopulse electric fuel pump has been announced by the Autopulse Corp., Detroit, Mich. It is recommended for original equipment and for installation by fleet operators on trucks and buses. If the vehicle is already equipped with a fuel pump, Autopulse may be used as an auxiliary pump, thereby

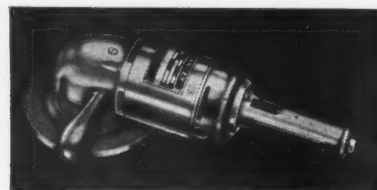
eliminating road failure due to any form of pump trouble.

The Autopulse, as is well known, is an electrically-operated fuel pump which is self-contained and may be mounted in any convenient location. The best location is away from the hot engine and under-hood atmosphere, preferably near the gas tank and at a level below the carburetor. When mounted in this fashion, the pump will feed a uniform flow of fuel to the carburetor—without surge or forcing since the pressure is uniform and in no way dependent upon engine speed.

It is claimed that an Autopulse installation at the fuel tank eliminates vapor lock due to the fact that the temperature of the fuel at the carburetor is reduced from 60 to 70 deg. F. Another advantage of the Autopulse is the ability to make a multiple hook-up of two or more pumps for truck or industrial installations. The failure of one pump does not affect the others and the vehicle can continue without interruption.

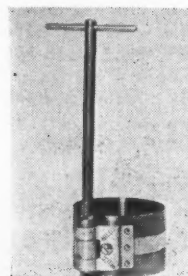
Stanley Disk Sander

THE Stanley Electric Tool Division of the Stanley Works, New Britain, Conn., has announced a new electric sander known as No. 77. It is ball bearing throughout,




sturdily constructed, streamlined for use in close places, and light in weight. It has a high speed universal motor inclosed in a strong aluminum alloy housing. Finished complete with a 7-in. flexible pad, 12 sanding disks, wrenches, and a heavy rubber covered three conductor cable.

Piston Ring Compressor



A PISTON ring compressing tool which can be adjusted quickly for any diameter from 2 in. to 5 in. and which sells for only 95 cents to repairmen, has been added to the Wilco line of automotive products by Wilkening Mfg. Co., Philadelphia.

The advantages of the Wilco (universal-type) ring compressor, in addition to its low cost, are that only one unit and a key are needed to handle the entire automotive size range; adjustment to size is made simply by turning the key handle; it is easy to keep available for quick use; it holds the rings tightly and squarely; and the edges of the band are crimped to stay outside the cylinder.



I CAN PROVE THAT
POWER BRAKING
PAYS **BIG!**

**A SWELL
GENT TO
HAVE ON
YOUR SIDE!**

WHY MOST POWER BRAKES ARE BENDIX

- ★ Least Weight Added
- ★ Fewest Added Parts
- ★ Low First Cost
- ★ Practically No Maintenance
- ★ Instant Remote Control
- ★ All Emergency Features of Train Operation
- ★ Quickly Installed
- ★ Original Brake System Left Intact
- ★ Fully Controlled Power Application
- ★ A Nation-Wide Exchange Plan
- ★ A Nation-Wide Service Organization
- ★ Years of Power Braking Experience and Unapproached Protection Over Future Years of Satisfying Service

COMMERCIAL CAR JOURNAL
MAY, 1937

WHY *not* talk about trouble for a minute—it's a whole lot cheaper to talk about it than to get out of it!

Ever think how many accidents, big and small, would never have happened if the truck or car involved had stopped *even one second* sooner?

Genuine Bendix B-K Controlled Vacuum Power Braking stops a truck with enormously less pedal pressure. Drivers don't waste so much muscle-effort. So they don't get so tired-in-the-legs. So they stay out of trouble.


And if a driver does get into trouble,

John Law is a lot more friendly to the lad who is able to show that his truck can stop on a dime—or at least a dollar. It's proof of carefulness.

Ask any police traffic officer. You'll find him 100 per cent for Power Braking.

And when you're ordering Power Braking make sure you get genuine Bendix B-K—the exclusive *Controlled Vacuum* Power Braking—standard equipment with most truck manufacturers. Write for literature.

BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation)
401 Bendix Drive, South Bend, Indiana

BENDIX 
Controlled Vacuum
POWER BRAKING

News

SUMMARY

March Truck Sales and Output Best on Record

March was the best month on record in truck history for new truck registrations with a total of 56,500 units, which is 8 per cent better than March, 1936, when 52,430 units were registered and 35 per cent better than the preceding month of

February when 41,815 units were sold. March sales is estimated on the basis of returns from 29 states. Sales for the first three months of 1937 were 145,924, which is a 7 per cent gain over the same period last year when 136,491 units were sold.

New truck production for March also established an all-time high exceeding every other March in truck history with a total of 95,629 units. This is 18 per cent better than March, 1936, when 80,981 units were produced and 31 per cent better than the preceding month of February when 72,542 units were produced. Production for the first three months of 1937 totaled 242,994 units, which is 13 per cent better than the 213,957 units produced in the same period in 1936.

APPOINTMENTS

LINCOLN ELECTRIC CO., Cleveland, has appointed William Sivyver and B. B. Ross to the staff of its Philadelphia branch with offices at 401 N. Broad St. John S. Humble has been named as arc welding consultant for the Boston office.

AUTOCAR CO., Ardmore, Pa., has named Harry Heiman, Inc., 319 Lafayette St., Utica, N. Y., as Autocar dealer under the Buffalo branch district.

AMERICAN SAFETY INSTITUTE, Detroit, has appointed John S. Worley, professor of Transportation and Engineering at Michigan University, as chief of its technical staff. He will continue his work in studying and eliminating traffic hazards. TRUCK EQUIPMENT CO., INC., Buffalo, N. Y., has appointed John P. Bartram as manager of its New York City branch.

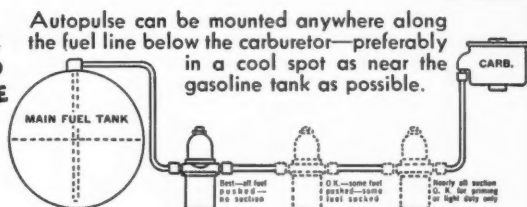
BORG-WARNER CORP., Chicago, has renamed all officers to continue in their present positions following the annual meeting of the board of directors and stockholders.

SHERWIN-WILLIAMS CO., Cleveland, has appointed W. J. Montgomery as general manager of transportation sales. He was formerly assistant manager of transportation sales.

AUTOPULSE ELECTRIC FUEL PUMP A QUICK, EASY INSTALLATION CURES FUEL FEED TROUBLES MEANS LOWER FUEL COSTS

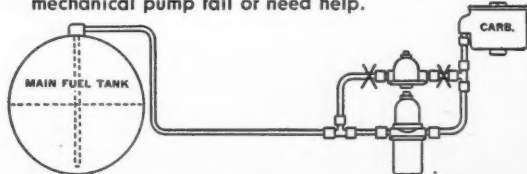
Thousands of installations now in service have definitely proved that Autopulse is the quickest and easiest system to install—and the only fuel supply system that cures vapor lock and provides real economy by delivering cool fuel to the carburetor even in the hottest weather.

● CAN BE INSTALLED ANYWHERE



● IDEAL FOR DUAL USE

When used as a secondary system, Autopulse primes the motor, then operates only enough to maintain even pressure should the mechanical pump fail or need help.



● MULTIPLE ADVANTAGES

With Autopulse Multiple Hookups the failure of one pump does not affect the others—you always get in under your own power.

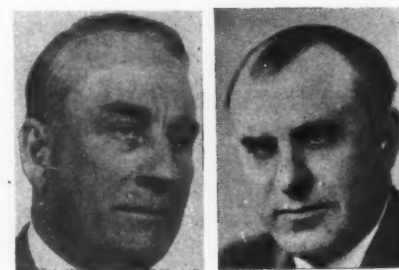
AUTOPULSE CORPORATION
DETROIT • MICHIGAN

● EXCHANGE AND REPAIR SCHEDULE

Permits new pump purchases at a saving with turn-in of vacuum tank, mechanical pump, or ANY type Autopulse—or purchase of factory rebuilt pump with new pump guarantee.



R. F. Gloster (left) and C. A. Fletcher (right) have both been appointed assistant sales managers for Studebaker with headquarters at South Bend, Ind., and New York City, respectively



S. B. Cochran (left) and C. H. Monahan (right) have been appointed regional managers of the Chicago and South Bend branches, respectively, for Studebaker

THE EDISON-SPLITDORF CORP., reports that it has doubled its field force since last December with business for the first quarter of 1937 running 40 per cent ahead of last year. Recent staff additions include: Victor Michaels in the Middle Eastern territory; D. W. Greig in the North Central; W. Zimmerman in the New York metropolitan area and R. H. Deibler in the Southern Pacific coast territory.

[Additional News Page 44]

Fleet operators say...



A LARGE number of fleet operators reported their experience with batteries in a recent survey. Their records show that 91.5% failed prematurely. Only 8½% wear out from long life, use, and old age!

More than half these failures were caused by weaknesses or faults within the battery itself. Clearly, this is because many of the batteries in use are not designed for the tough service in trucks and commercial vehicles.

The survey also shows that one-third of the batteries failed due to lack of attention, under- or over-charging, cells allowed to run dry, and similar treatment.

The answer? Equip with Exide—there is a line of four new Exides especially built for the needs of 90% of all commercial vehicles. Then give these batteries the simple, easy attention that any good equip-

ment deserves. That is the one sure route to far longer battery life and lower costs.

In addition to the new Exides for commercial vehicles, there is the regular heavy-duty Exide line for large trucks. Write us for the name of the nearest Exide Wholesaler, who will give you full details.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



Exide

COMMERCIAL TYPE BATTERIES

COMMERCIAL CAR JOURNAL
MAY, 1937

New Truck Registrations by Makes by Months

	Autocar	Brockway	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	International	Mack	Reo	Sterling	Stewart	Studebaker	White-Indiana	Miscellaneous	Total
January..... 1937	130	102	14,362	883	3,764	207	16,544	2,820	6,244	389	354	29	92	169	582	948	47,609
January..... 1936	75	94	15,124	495	6,207	223	14,606	428	4,743	90	339	8	85	143	493	607	43,760
February..... 1937	112	115	7,939	602	5,043	206	16,460	3,051	5,256	364	317	26	101	222	550	1,451	41,815
February..... 1936	57	88	14,978	510	5,556	170	12,226	758	4,365	107	217	4	62	134	408	661	40,301
2 Months..... 1937	242	217	22,301	1,465	8,807	413	33,004	5,871	11,500	753	671	55	193	391	1,142	2,399	89,424
2 Months..... 1936	132	182	30,102	1,005	11,763	393	26,832	1,186	9,108	197	556	12	147	277	901	1,268	84,061
% Change... 2 Mos.	+83	+19	-26	+46	-25	+5	+23	+395	+26	+282	+21	+358	+31	+41	+27	+89	+6

STUDEBAKER CORP. has appointed two new assistant regional managers. They are Paul R. Davis operating the territory outside of Philadelphia, Pa., and Helm Walker in charge within Philadelphia.

THE CURRAN CORP., Malden, Mass., manufacturers of the degreasing compound known as "Gunk," has promoted W. H. Mitchell, assistant sales manager, automotive division.



E. D. Herrick, who has been elected president of Lycoming Mfg. Co. He was formerly chief engineer

What's the Truck Owner Thinking About?



Here are some of the "tough ones" that are probably puzzling your mind as business recovery speeds up nowadays:

1. How much time do my trucks spend waiting for a load, with idle time costing \$4.00 an hour?
2. The big truck made only two trips today—what's the reason?
3. They say we need to buy another truck—do we?
4. This speeding is ruining my trucks. How can I make 'em stop it?
5. Are any of my trucks used at night?
6. This overtime—is it necessary?
7. I'd like to plan the routes better, but first I need some facts to go on. Etc., etc.

Here's real help for you. It's all in our Booklet—"Ten Ways of Getting More Work Out of Motor Trucks."

It's FREE for the asking. Send for it today!

THE SERVICE RECORDER COMPANY
1422 EUCLID AVE. • CLEVELAND, OHIO

This chart shows up all delays.

Here's a stop of 2 hours!



The Servis Recorder

Tells Every Move Your Truck Makes

LEGISLATION

EFFECTIVE DATE FOR CONTRACT FILING for contract carriers has been extended from April 15 to June 15 by order of the ICC. The order requires certain classes of contract carriers to file with the ICC, publish and keep open for public inspection copies of their contracts existing and in force on April 15.

GAS TAX DIVERSION in the state of Maryland proved a boomerang when the Federal Government slashed its 1937 share of road aid funds by one-third because that state diverted \$4,000,000 of highway funds for other purposes.

TARIFF RATES AND CHARGES for common carriers may be revised if the revised rules recommended by Examiner Paul Coyle become the order of the Interstate Commerce Commission. The revised rules governing the settlement of tariff rates and charges of trucking companies recommended are: (1) Carriers may extend credit to shippers in the amount of the charges for a period not to exceed eight days, excluding Sundays and holidays; (2) freight bills shall be presented to the shipper within five calendar days from date of delivery of freight; and (3) if an additional bill for charges is rendered, the carrier may extend credit for 30 days in the amount of such additional charges.

SALES

SEALED POWER CORP., Muskegon, Mich., announces that shipments of piston rings in the first quarter of 1937 exceeded every preceding quarter in the history of the company. Shipments totaled 18,988,423 piston rings compared with 9,773,214 in the first quarter of 1936—a gain of 94 per cent.

AUTOCAR CO., Ardmore, Pa., enjoyed sales of \$11,687,930 in 1936 compared with \$7,965,822 for the previous year. Gain was 47 per cent. Net profits for 1936 were \$163,695.

STUDEBAKER CORP., South Bend, Ind., established an all-time record in truck and commercial car shipments during March with a total of 1386 units. This

[Additional News Page 46]

**"My fleet has lost
its appetite for oil"**



WHEN you feed Gulfpride to the engines in your fleet, you can expect a definite drop in oil consumption.

But the story of this remarkable oil does not stop there.

For Gulfpride has the *extra* qualities that work toward a real, worthwhile saving in maintenance and repair costs.

Because it will form less objectionable carbon, gum or sludge in your engines, it will help you make savings in your maintenance costs. And because it is such an extremely tough motor oil, it will stand up in the biggest brute your fleet can boast of . . . help you cut down repairs.

Gulfpride will give your cars, trucks or buses the most dependable lubrication money can buy.

Behind Gulfpride's remarkable stamina is the Alchlor process—the only one of its kind—Gulf's exclusively. This process removes as much as 20% *extra* waste from the 100% Pennsylvania crude of which Gulfpride is made.

Try this amazing oil in your own fleet. We believe the savings it makes will be pleasant reading on your cost sheets.

Gulfpride
Reg. U. S. Pat. Off

The world's finest motor oil



Gulf Oil Corporation
Gulf Refining Company
Pittsburgh, Pa.

(CONTINUED FROM PAGE 44)
figure tops by 335 units the previous record established in February when 1251 units were shipped.

DIAMOND T MOTOR CAR CO., Chicago, sold a total of 4618 trucks in the first three months of 1937. This is an increase of 48 per cent over last year's sales of 3134 trucks in the same period. March sales alone amounted to 1805 trucks making the second largest month in the history of the company.

"H" LINE OF FEDERALS

A COMPLETE line of "oversize" trucks, supplementing the 1937 models recently placed on the market, has been announced

by Federal Motor Truck Co., Detroit. The "H" series, as the "oversize" line is designated, has been designed to increase the margin of safety for the unusually heavy-duty applications such as dump truck service, tractor-trailer operation in hilly country or over bad roads, etc.

The "H" series trucks have the same styling, appearance, and general specifications as the corresponding models of the standard line. The chief difference is in the use of heavier rear end construction employing larger rear axles, springs, rear brakes, universal joints, and tire equipment. These features add about 300 to 400 lb. to the corresponding standard chassis weight.

Although the ratings of the "H" series

models have been increased correspondingly, the primary reason for the oversize jobs is to provide an increased factor of operating safety for tough trucking applications.

The oversize line includes six conventional models and four cab-over-engine models having the following designations and ratings:

Conventional	Rating—Tons
Model 15H	1½-3
" 18H	2 -3½
" 20H	2 -4
" 25H	2½-4½
" 29H	3 -5
" C8H	7½

C-O-E Models	Rating—Tons
Model 75H	1½-3
" 80H	2 -4
" 85H	2½-4½
" 89H	3 -5

REO ENLARGES BOARD

FOLLOWING a meeting of the board of directors and stockholders of the Reo Motor Car Co. at Lansing, Mich., it was announced that Reo would continue in the truck field exclusively. This announcement spiked the report that the group of Eastern investors who recently acquired stock in the company wanted Reo to re-enter the passenger car field. The Eastern group is headed by Frank Vanderlip, Jr., of New York.

Under the agreement of the present board with the new investor group, the board will be enlarged from five to nine members with the additional members representing the common stock holdings of the Eastern group. Two of the new directors will be Mr. Vanderlip and Herbert Wilson of the Union Carbide Co.

BATTERY SURVEY

THE BATTERY DIVISION of Thomas A. Edison, Inc., Kearny, N. J., has devised the Edison MPD survey to determine the size of battery demanded by a truck on the basis of the operation in which the truck is engaged. This survey will be made by Edison for any truck operator without cost or obligation.

RACING

INDIANAPOLIS'S 500-mile race this year on May 30 will mark the silver anniversary of that classic. As last year, all entrants in this gruelling contest will be required to have their cars tested on the officially approved Bear safety testing equipment.

HITS, RUNS, ERRORS!

ERROR: The table on "Truck Fleets by Size" published in the special April Reference Annual on page 60 has an error in the sixth column. The heading in this column which refers to large fleets should read "100 and up", not "1000 and up."

TALENT AVAILABLE

SID G. HARRIS, formerly with Reo Motor Car Co., is now available for a connection. He handled national accounts and large and local fleet sales in the New York area. Address: 160-15 7th Ave., Beechhurst, Whitestone, N. Y. C.

COMMERCIAL CAR JOURNAL
MAY, 1937

The HIDDEN MEANING
of some astonishing
low maintenance records

TIMKEN

"TorsionFlow" Axle Shaft



the splines do it—
16 splines—

both shaft and side gear have splines
equal in size and shape, equal in
greatly increased strength—

the shaft itself is Torsion Flow—

the grain of the steel controlled,
from forge to finish, to eliminate local
stresses and strains.

It's a better shaft. Patented.
Trademarked.

THE TIMKEN-DETROIT
AXLE COMPANY
Detroit, Michigan

WISCONSIN AXLE
DIVISION
Oshkosh, Wisconsin



GOODYEAR WINS SEVEN YEAR WAR!

AMAZING NEW YKL TRUCK AND BUS TIRE CONQUERS INTERNAL HEAT...

Promises Great Economies on the "Murder Runs"

A war against heat!

A war against the deadliest enemy truck and bus tires have ever faced!

A war waged to curb the costly destruction of tires on the "murder runs"!

For seven years, Goodyear engineers have fought that war.

Today they stand victorious following one of the most spectacular achievements in the entire history of the rubber industry—the perfection of the New Goodyear YKL—built of Rayotwist cord.

Internal heat, in its attack on tires, has two powerful allies—tremendously large loads and the increasingly high speeds at which these loads are carried.

No conventional tires have been able to resist the internal heat created by heavy loads carried at sustained high speeds on the "murder runs". For years a super-tire has been sorely needed.

Goodyear engineers won their seven year war against heat only after they had found a new material for spinning yarn, evolved a new technique for twisting the yarn into tough, strong cords and perfected a new process with which to bind the cords to the rubber compound.

The material is Rayotwist. It is made from a special rayon with a tensile coefficient much higher than that of ordinary commercial rayon. Filaments of Rayotwist, very fine in texture, are spun into cord.

The process used to bind cord and rubber is a secret bath—now patented and owned by Goodyear.

When the Goodyear YKL was completed, southwestern deserts became the scene of the fiercest series of tests to which any tire was ever subjected.

There under a blazing sun, carrying back-breaking loads at terrific speeds, the new YKL tripled, quadrupled, even multiplied by five the mileage of conventional tires.

The seven-year war had been won. The world had its super-tire.

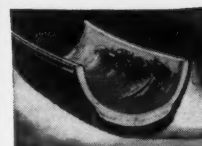
CAUTION!

Goodyear engineers now recommend the new YKL Tire only for the most destructive types of service—those "murder runs" over long distances at sustained high speeds.

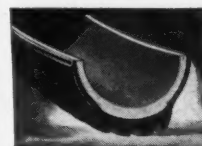
In ordinary trucking, its extraordinary capacities cannot be fully utilized—and, frankly, its higher price cannot be justified.

But for operators of trucks and busses on "murder runs," Goodyear recommends the YKL Tire with full confidence in its ability to set new and spectacular performance records—to effect great savings as compared with the cost of conventional tires.

Such operators are invited to write direct to The Goodyear Tire and Rubber Company, Inc., Akron, Ohio, for full particulars.



A section of the interior of an ordinary cord tire burned out and broken in fast, heavy-duty travel.

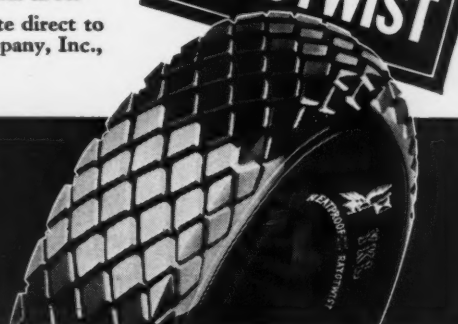


A section of a YKL Tire with the same number of miles at the same speed and under the same heavy load.

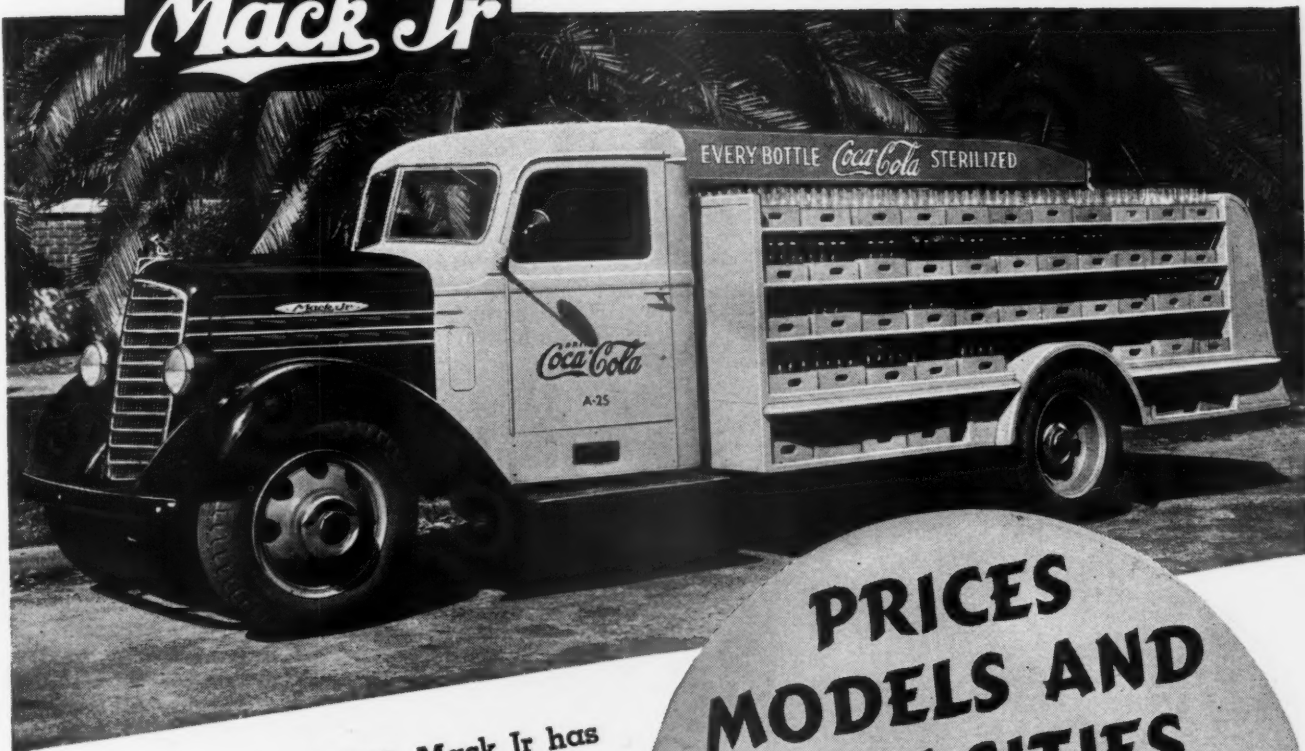


GOOD YEAR

TRUCK AND BUS TIRES



Mack Jr



**PRICES
MODELS AND
CAPACITIES
FOR EVERY
HAULING
NEED**

The sensation of 1936, Mack Jr has become the new standard of value for 1937 in the low-price field. Thousands of haulers in the lighter range greeted the introduction of a name famous for rugged stamina, dependability and economy. The Mack Jr gave them reserve strength, extra power and margins of safety never before possible in this price class.

MACKTRUCKS, INC., NEW YORK, N.Y.

9,300 FEET OF FIR—37 TONS!

That's what this rugged Mack six-wheeler hauls over a private road. On public roads, loads of this weight would be prohibited. Here's proof of the reserve stamina of Mack trucks on the toughest hauling jobs. Regardless of the

size of your job Mack gives you dependable, bottom-cost truck operation. Mack now offers the most complete line of trucks in the industry. See Mack before you buy any truck at any price.

Mack



What Fleets Did for Flood Victims

(CONTINUED FROM PAGE 22)

flood reported "no freight loss."

One load of freight was lost by a heroic driver, whose name could not be learned, who dropped his automatic trailer while traversing flood water, hitched his tractor to a scow full of people that was being washed down the current and pulled them to safety. The rising flood was over his motor before he could return to pick up his freight.

Any doubts of the effectiveness, in

fact the vital necessity, of highway freight transportation were allayed during the 10 wet days the flood was at or near its crest.

The tie-up of road beds and rolling stock on miles of important railroads means little or nothing to the truck and trailer that can detour floods, keeping to high roads, even though they involve a hundred-mile detour. The freight goes through, perhaps not on pre-arranged schedule, but as dependably as the mail.

At the first sign of flood, highway transportation companies all up and down the valley volunteered their ser-

vices and their equipment to the Red Cross, municipalities, states, and to private citizens who were in distress—with-out stint, without regard of themselves or safety of equipment, and without thought or hope of pay except the reward of a good job well done.

All bars were let down by special order of the ICC on January 26. Common carriers, regardless of routes, licenses, and load limits were permitted to transport food, clothing, supplies, medicines and any equipment needed in the flooded areas.

The Interstate Trucking Co. was early in its offer of 43 terminals covering 13 states and 850 twenty-two-ft. trailer units with all personnel necessary to haul anything anywhere.

Operating under a military pass, this company as well as many others brought many trailer loads of Red Cross supplies, cots, bedding, food, and much-needed medical supplies. Drivers and dispatchers worked day and night and in nearly every case were paid full rate, yet the operating companies collected and expected nothing for their services.

Four loads of bread were carried in record time from Chicago to Cincinnati, the loads barely being landed when the trucks and trailers were used to haul water, for, with "water, water everywhere, there was not a drop to drink" in many of the great cities in the flooded area that depended on municipal water supplies.

The constant danger of dysentery and typhoid that invariably accompanies flood was checkmated by the establishing of water depots.

THE Interstate terminal at Cincinnati became more than a freight-forwarding center. Here was established a soup kitchen for feeding flood refugees and, with electrically operated police and fire call boxes out of order, this office also became the temporary police and fire station.

When the need arose for a particular item, no thought was given to the necessity of making up a load or a profitable haul. One trailer drove 160 miles to return with only 500 lb. of special sterilizing soap needed for sanitary purposes.

Rickenbacher Transportation Co. turned out all equipment for a special rush delivery of Westinghouse motors for the Union Gas & Electric Co.—motors urgently needed to maintain electric service and aid in pumping out flooded basements and buildings. This record trip was made from Sharon, Pa., with a motorcycle escort of state police.

All companies working with National Carloading volunteered services and equipment and at the crest of the flood more than 720 trailers and trucks were at the instantaneous command of the

(TURN TO PAGE 52, PLEASE)

JOYCE Truck and Bus LIFTS



KEEP 'em PUTTING on MILES

The old rolling stock must be kept going . . . safely . . . and service costs must be kept down. A JOYCE Two-Piston Lift speeds up grease jobs and tire and underbody inspection . . . the fleet rolls on and off quickly . . . and the maintenance men do a better job in half the time.

No load too heavy. Four to 20 tons lifting capacity. Air or electric operation. JOYCE Electric Pumping Unit saves 86% in power



cost . . . operates 1, 2 or 3 Lifts. Municipalities, public service corporations and other fleet owners find a JOYCE Two-Piston Lift produces a quick return on the investment. It helps "balance the budget."

JOYCE engineers are specialists in hydraulic lifting problems. Let them give you the benefit of their experience. Simply submit details to The Joyce-Cridland Company, Dayton, Ohio.

JOYCE LIFTS

BUILDERS OF LIFTING DEVICES SINCE 1873



"TROUBLE IN MOROCCO"

Armored Trucks Plow Through Scorching Sand, Hurtle Desert Dunes



GOODRICH SILVERTOWNS FIND REAL WAR IN FILM THRILLER

by Lowell Thomas

"Diving down the banks of steep sand dunes, skidding with two wheels in the air, roaring over the flat stretches—it's a tough job for trucks and tires.

"When they filmed 'Trouble in Morocco' they had plenty of trouble getting motorized equipment that could travel the 'camel country.' I've crossed the Sahara. I know what a job it is to get through with even a light passenger car, crawling along slowly. When you take heavy equipment, push the accelerator to the floor, plow through burning desert sand, it's torture for tires!

"Believe me, there were plenty of thrills, hazards and perilous moments in making this picture.

"There was no place for sissies in the cast—and no place for 'weak sister' tires on the job."

Larry Darmour, producer for Columbia distribution of this feature picture starring Jack Holt, chose Goodrich Silvertowns for their armored cars. And many of Hollywood's largest studios use Goodrich Truck Tires for hauling cameras and delicate sound equipment. Where tires matter most, that's where you find Triple Protected Silvertowns.

Protects Against Blow-Outs

Every Goodrich Truck Tire has a new invention built into the sidewall—a 3-way check against blow-outs and side-

wall breaks. This protection actually checks 80% of premature failures! It strikes right at the cause of tire delays. Here's how it works:

- 1 PLYFLEX**—distributes stresses throughout the tire—prevents ply separation—checks local weakness.
- 2 PLY-LOCK**—protects the tire from breaks caused by short plies tearing loose above the bead.
- 3 100% FULL-FLOATING CORD**—eliminates cross cords from all plies—reduces heat in the tire 12%.

With that kind of cool-running tire you're bound to get greater mileage on any kind of haul. Goodrich can give you the exact type and size of tire for your particular service—and there's *no premium price to pay*. Call the Goodrich dealer.

Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

(CONTINUED FROM PAGE 50)
Red Cross in Cincinnati.

Utilities are so taken for granted that their presence is hardly noticed and their absence is more keenly felt than if their convenience had never been experienced. With electric plants shut down, profiteering in candles and oil lamps was effectually stopped by several rush truck shipments of candles, and the only available lanterns that could be secured in the metropolitan areas like Cincinnati, Louisville, and other large cities, were secured from trucking companies who always carry a supply of lanterns for emergencies.

R. L. Barnett of Evansville, Ind., proved to be the hero of the hour. With his fleet of eight trucks and trailers, he moved his family to high ground at the start of the flood and then worked day and night to move property from that part of the city that was threatened.

WHILE the loss of freight was negligible, the loss of trucking companies was of such great amount that estimates of the total cannot be reached. Universal in Cincinnati staged a succession of strategic retreats, moving from location to location as high water crept up to them.

Cushman, who had recently occupied a new building, found only the foundation standing when the waters receded.

The entire office of CCC Highway Transportation of Cincinnati was seen riding a wave headed for the Gulf of Mexico and the force of the current can be imagined when it is known that the heavy safe was found four blocks away.

LITTLE storage was necessary for trucks and trailers, for they were kept in constant operation. Commercial shipments as well as emergency shipments were carried through as usual and the only delays arose from the fact that individuals and industries in the flooded districts could not receive their freight after it arrived at the terminals.

Trailers proved their value at Memphis, Tenn., where a mobile telephone outfit was established in a trailer. A short-wave wireless outfit was set up in a trailer and taken to isolated communities which were without other means of communication in southern Ohio.

With main railroad stations and post office, express and freight terminals closed, only the suburban stations on higher ground were open to the railroads. These smaller suburban stations augmented their facilities by lining up fleets of trailers to use for the sorting, storage and handling of freight, mail.

With the shortage of water fit for use, there was an unseasonable demand for soft drinks and more than 35 trailer loads of Coca Cola were hauled from Cleveland to Cincinnati by CCC, and in many cases men went without shaving, unless they could shave in tomato juice. Cleaning and sanitary materials were in demand and started moving into the flooded areas via truck and trailer even before the crest of the flood had been reached. Trailer loads of mops, brooms, buckets, soap, and cleaning materials formed the basic part of the freight, but it is an interesting circumstance that there was a remarkable increase in the tonnage of powder, cold cream, and other feminine beauty aids. Ladies must be beautiful even in the flood.

CINCINNATI kept clean during the flood with the aid of Fenton Dry Cleaners, who sent a trailer train load of clothing to associated dry cleaning plants in Dayton and Columbus every morning. Service as usual.

France once sent her army in a fleet of taxicabs to protect her borders. Twenty years later the life, health, and welfare of millions of people was protected with the aid of the highway transportation industry. The truck and trailer industry—from executives, dispatchers and drivers to the last grease ball—earned the acclaim of a nation for their effectiveness in keeping open the channels of transportation during the flood.

Fatal Accidents begin at 40!



HOOF GOVERNORS Reduce Accidents by 40%

Fleet operators and police authorities know that most fatal accidents occur at 40 miles or more per hour. Below that speed, trucks can operate with reasonable safety. Above it, the accident curve rises sharply. That's why fleet operators by thousands are turning to HOOF GOVERNORS. HOOF Governors reduce accidents by 40%!

HOOF Governors are made with aluminum and stainless steel. The 10 to 50 Series are factory-calibrated and set for any desired speed, making an expensive road test on a country highway unnecessary. Once installed, they cannot be tampered with. They maintain a constant uniform speed and maximum torque because they are free from all friction . . . and have the dependable Cantilever spring, an exclusive HOOF feature. Only one working part . . . your guarantee of freedom from sticking shafts and pistons . . . the cause of many road delays.

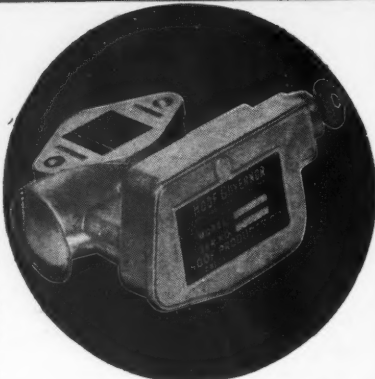
Order a HOOF Governor TODAY! Mention make, model, speed and type of vehicle. Also ask for free 64-page Governor Manual and Supplement.

HOOF PRODUCTS COMPANY

CANTILEVER GOVERNORS

162 NORTH FRANKLIN STREET

CHICAGO, ILLINOIS

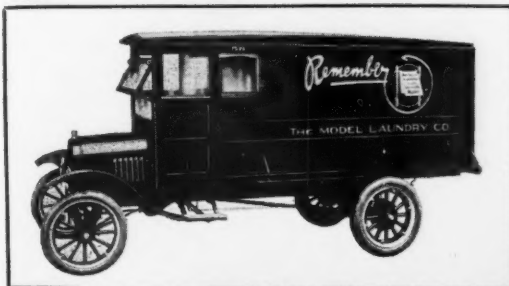


Three Advanced Types of Hoof Governors

A.C.H. "Seal-Type" Governors . . . protected by the tamper-proof HOOF Seal.
HOOF "Key-Type" Governors . . . speed can be changed only by person having key.
HOOF "Dash-Control" Governors . . . speed can be changed from the dash only by holder of key.

PLYMETL...

always in style



Body By Luce Mfg., Lansing, Michigan

PLYMETL paneled BODIES MEAN *Stronger* BODIES

Commercial body styles may come and go, but body builders, in increasing numbers, specify Plymetl panels for the same reason which made this material successful many years ago. The builders of the old and new bodies shown above found "Plymetl Economy," to be stylish in 1937 as in 1919, because—

Plymetl awards the buyer a definite economy in time and labor saving in installation...

Plymetl's strength and stiffness eliminates need for many inside supports, thus decreasing dead weight...

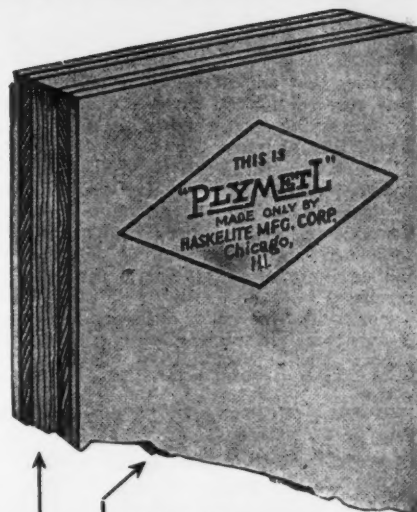
Plymetl's light weight does not burden the power plant...

Plymetl's smooth metal face means an attractive paint job and eliminates distorting highlights...

Economical installation, reduction of dead weight, increased payload, smooth surface and great durability, all spell major reasons why since 1919 Plymetl has always been "in style."

DID YOU KNOW THAT the $\frac{1}{4}$ " Plymetl (steel face one side) is on the average of $21\frac{1}{2}$ times as stiff as sheet steel of the same weight?

WRITE TO US FOR STOCK SIZES AND PRICES



STEEL FACE
ONE OR BOTH SIDES

QUALITY PLYWOOD BONDED
WITH WATERPROOF GLUE

OFFICES IN CHICAGO • DETROIT • NEW YORK

HASKELITE MANUFACTURING CORPORATION

208 WEST WASHINGTON STREET • CHICAGO, ILLINOIS

What Floods Did To Fleets

(CONTINUED FROM PAGE 23)

Repairs to a fleet of 80 tractor-semi-trailer units operated by a company holding the hauling contract of a grocery chain totaled \$1,482.35, although only one unit was submerged. The others were splashing through water constantly delivering supplies or helping in relief. All wheel bearings on these units were repacked; transmissions and differentials drained, flushed, and lubricated; brakes dried and

cleaned as quickly as the equipment could be spared from service. New clutch facings were installed on 14 tractors which had gone through deeper water. Otherwise, all were pronounced mechanically fit.

Completely covered by flood waters in Paducah, Ky., for a period of 16 days, the submerged unit of this fleet takes the length-of-time-under-water record. Purchased only three months before the flood, an outlay of \$302.26 for work done in the company's shop was necessary to put the vehicle back on the road. Other than repairs required by similar equipment submerged for lesser periods, me-

chanics who tore down this motor found that all bearings had rusted and that the timing gear and timing chain were unfit for further use. Transmission and differential were dismantled completely and each part washed thoroughly. As water had worked its way beneath the paint on both tractor and trailer, the paint had blistered and the metal beneath rusted. New paint was applied after all rusty spots had been sand-papered. The trailer body, aluminum throughout, suffered no other damage.

Many other trailer bodies, however, took it on the chin. One manufacturer's sales and service agent had eight used trailers with wooden floors and plywood side-walls covered by water for six days. He repaired 23 of similar construction which had suffered practically the same exposure. Without exception, the floors and side-walls on this equipment were buckled, necessitating replacement. With other repairs these rehabilitation bills were in the neighborhood of \$250.

Old equipment in several cases benefited from the water's wrath. For example, mechanics who repaired a six-year-old 1½-ton pick-up job claim that it now runs better than it had for the two years previous to its five-day submersion. Thirty dollars was the sum expended in making this truck more fit for service, although several minor parts, badly worn before the flood, were replaced.

Passenger cars present a different aspect since there was but little difference in damage suffered from exposure of three or 10 days, the length of time most were under water. Car radios and motors in hot water heater systems were ruined. Without this special equipment, the average passenger car repair bill hovered around the \$75 mark.

WITH but few exceptions, ammeters, gasoline gauges, speedometer dials and other dashboard instruments were of no further use. Oil gauges, however, can take it. They showed no ill effects even though they were in water 10 days or more. Floor boards, buckled into grotesque shapes, made good fire wood after wind and sun dried them out. Upholstery, cushions and the like usually were consigned to the garbage collector. These were the parts most affected by water. All others proved more seaworthy.

Generators were the worst hit of the electrical units, although a majority were placed back in use after coils and armatures had been cleaned and baked and bearings cleaned and oiled. In many cases, replacement of the front bearing was necessary.

Rarely were starting motors unfit for further service. Cleaning, oiling, and drying were sufficient to put them in first

(TURN TO PAGE 56, PLEASE)

For Economy START BUYING BATTERIES ON THE MPD BASIS



Vehicles that are alike in all respects may require different batteries because of the varying service conditions under which they operate.

The Edison MPD Survey of the individual requirements of each vehicle in truck and bus fleets reveals these differences, and indicates the right battery to reduce costs on a definite Mile Per Dollar basis, and yet give most efficient service.

For each of the varied operating conditions there are specifically engineered

Edison Highway Transport batteries. They are made differently from passenger car batteries—heavier plates, special separators with extra rubber insulators; even a special active material—all developed in the Thomas A. Edison laboratories for the extra stamina demanded by the hardest commercial service.

Edison thoroughness and experience... plus the MPD basis of fitting batteries to individual service needs... can give you more Miles Per Dollar—plus More Power—Longer.

THOMAS A. EDISON, Inc., Emark Battery Division, Kearny, N. J.

EDISON HIGHWAY TRANSPORT BATTERIES

☐ We would like to arrange for a free Edison MPD Survey of our fleet.

☐ Send us further information about your MPD method of figuring battery economy.

Firm.....

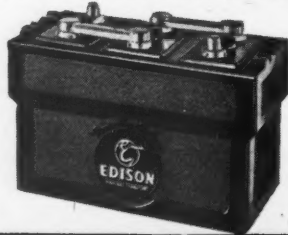
Individual.....

Position.....

Address.....

City.....

State.....



A PRODUCT OF
Thomas A. Edison
INCORPORATED

YOU DON'T *pay* FOR TIRES

WHEN YOU BUY THEM!



STRONGER—All plies are full plies anchored at the bead—no floating “breaker-strips”—every inch and every ounce is there for just one purpose—to produce more miles and a lower cost for you.



COOLER—They flex uniformly without that heat-producing “hinging action” of ordinary breaker-strip tires. Heat kills the life of cords and cuts down the miles in a tire. Generals are cool—that’s why they run more miles at a lower cost for you.



“COMPACT RUBBER” TREADS—All tires stretch due to fatigue in the fabric, but Generals, having no idle, half-way plies, stretch least of all. The tread is kept compact and compressed against the road—that’s why it produces more miles and reduces your cost.



NO matter what the price tag of a tire reads, it never tells you the *real* cost.

All it gives you is the purchase price, which is unimportant. After the full mileage of a tire is run, then and then only can you know what you have actually paid for that tire. The final cost is the purchase price divided by the mileage.

Recognizing these fundamentals, General Truck Tires have always been built stronger—to do their work better—deliver greater mileage and haul more pay load.

It costs more to build a General Truck Tire because of the way it is built. Thousands of truck operators know it costs less to use Generals because of the way they perform.

Your local General Tire dealer is ready to offer you the benefit of his factory-training and practical truck tire knowledge. He may be able to reduce your tire costs materially.

THE GENERAL TIRE & RUBBER COMPANY • AKRON, OHIO
In Canada—The General Tire and Rubber Company of Canada, Ltd., Toronto, Ontario

THE TRACTION
TREAD

THE
HIGHWAY

THE COMMERCIAL
DELIVERY

THE CLEATED
TRACTOR

THE
JUMBO

THE
ALL-GRIP



One of the most complete lines in the business—each tire built to give you more miles for less money

GENERAL TRUCK TIRES

(CONTINUED FROM PAGE 54)
class condition.

Batteries on many passenger cars were ruined by the sub-freezing weather which followed the flood. Unwelcome addition of river water to the solution in cells caused them to freeze, breaking the battery case. Since trucks were urgently needed, towing vehicles pulled them to garages as soon as the water subsided sufficiently, thus lowering the mortality rate on truck batteries. Recharging was needed by approximately 50 per cent.

Electric alarm systems are becoming increasingly popular on freight-carrying

vehicles, and, pleasantly enough, they were but little damaged by water. With a new battery box unit, fresh batteries, and dried-out wiring, they were again in shape to frighten highwaymen from valuable cargoes.

IGNITION systems held up surprisingly well. Switches were rarely affected. Wiring usually performed efficiently after it dried thoroughly, although many operators replaced high tension wires. Coils and condensers were the worst actors, being replaced in about 40 per cent of submerged vehicles. Only a few distributors failed to work properly

after they were cleaned and oiled.

Most mechanics agree that the water contained enough grimy particles to compel a complete motor overhaul. The general practice was to tear down motors and wash bearings, pistons, valves, and all other parts with a solution of soap and water. Similar treatment was given carburetors and fuel pumps in order to remove the muddy residue.

Merely draining and flushing gasoline tanks was not enough. Tanks were taken off the chassis and the conglomeration removed by hosing with water under heavy pressure. Drying was accomplished either by baking the tanks or using an air hose. Fuel lines were okay after being blown out.

THREE distinct schools of thought were developed on the procedure to follow on transmissions and differentials. One method was to drain only the water. Another school insisted on dismantling and washing. The third procedure was to drain, flush, and replace lubricants.

The huge majority of fleet operators removed wheels to repack bearings. Brake linings and drums were cleaned at the same time. And justly, too, as nearly half of the vehicles which chugged through water while in service needed new linings due to the excessive wear caused by grit and grime.

Cooling systems of submerged vehicles were drained promptly, since the flood occurred in January and owners feared frozen radiators.

Clutches were another source of trouble. Facings in most were replaced. Woven facings, especially, were beyond salvage. Rust on pressure plates was removed with emery paper and new springs installed in many pressure plate assemblies. Lubrication was the only requirement of throw-out bearings.

A double dose of grease, forcing water and the old lubricant out, was the medicine given steering gears, shackles, and other parts with grease fittings.

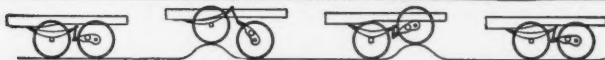
Bodies, except those already described, developed a few extra squeaks, but were otherwise unharmed. For a final touch, lest germs deposited by the flood should lay low an unsuspecting victim, bodies were disinfected.

RETURNING to their own jobs after a period of working 12, 14, sometimes 18 hours a day repairing all types of vehicles in hastily arranged relief repair centers, mechanics typify the spirit that held flood losses to a minimum. Handicapped by lack of electric light, many mechanics labored until near exhaustion in muddy, damp, vile-smelling garages.

As a parting gesture for those who must have a moral with every story, this, to-wit: Water and the motor vehicle do not mix, even as alcohol and gasoline.

TRUXMORE

WORLD'S BEST 3RD AXLE



CHANGING AMERICA'S HAULING HABITS

Modern Cab-Over-Engine Design, combined with TRUXMORE 3rd Axle is changing America's Hauling Habits.

Haulers the country over have recognized the Convenience, Economy and Safety, and the advertising value of Snappy, Modern Appearance of Cab-Over-Engine—TRUXMORE Units.

They have enough body space—for heavy or bulky loads—yet retain the turning radius of a short wheelbase truck. Ideal for congested areas, it's easy to handle—saves money too—

Write for Complete Information about this remarkable money making combination.

TRUXMORE is made in 5 sizes for All Trucks

DISTRIBUTORS IN MANY PRINCIPAL CITIES

New York
Syracuse, N. Y.
Binghamton, N. Y.
Rochester, N. Y.
Erie, Pa.



Chicago, Ill.
Philadelphia, Pa.
Pittsburgh, Pa.
Boston, Mass.

SUPER-POWER CENTER-LIFT HOIST AND DUMP BODIES BY HERCULES

Only Hercules can give you the much talked of Super Power "Center-Lift" Hoists. The diagram illustrates the difference. The New Hercules Hoist lifts to a full 50° without effort and with lowest oil pressures. In principle it far outdistances all competition—on service they out-perform!

Hercules sturdy steel bodies are built on a par with Hercules Hoists. Whatever your requirements, bank on Hercules to satisfy you.

Hercules Bodies and Service available everywhere through

**HERCULES STEEL
PRODUCTS COMPANY**
GALION, OHIO

Write for
NEW Literature



Ford Brake Adjustment

(CONTINUED FROM PAGE 28)

8. Lock anchor pin with shoes in this position by tightening lock nut "A." Then back off on adjusting screw at "D" and remove wheel, remove shim stock and reinstall wheel. Repeat operation at all wheels.

(Steps 5 to 8 inclusive can be performed using a brake concentricity gage. If this equipment is used it is possible to see the .005-in. clearance at the anchor. There is a special gage supplied by Ford which will make it pos-

sible to check and adjust the anchor to a standard brake drum. This equipment furnished by other equipment manufacturers is adjustable for brake drum size.)

9. Check position of brake cross shaft operating levers. Front brake cable operating lever should be resting against bottom of cross shaft bracket. If not, pedal to cross shaft rod clevis should be adjusted accordingly. Be sure that hand brake cable is not too short so that it holds the cross shaft out of position.

10. Run adjusting screw at operating wedge D (Fig. 11) in until shoes are tight in drums.

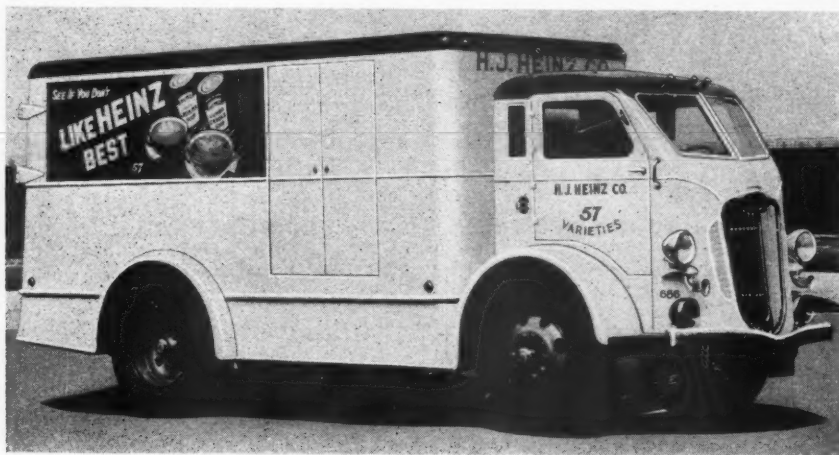
11. Adjust each cable clevis so that pin can be installed with cables pulled. (Ford recommends a 25-lb. pull on the cables and has equipment available for pulling and measuring pull.)

12. Back off on adjusting screw D (Fig. 11) until drag is removed. Repeat operations 10-12 on all wheels.

13. Apply hand brake to first notch and check wheels for even drag. If not even, back off on tight wheels to equalize.

14. For good results it is essential that brake springs be replaced according to color scheme shown in photograph and that all parts be well lubricated.

The 1½-ton truck will continue to have only the single brake shoe adjustment and the brake shoes are not cable operated.



EXPERIENCE LEADS TO MET-L-WOOD

The opinion of the man who has tried many types of construction counts more because his greater experience makes possible a better comparison.

H. J. Heinz Company have exacting requirements, and have tried different constructions in an endeavor to get the BEST equipment for their use.

We feel that the many Repeat Orders given us by this outstanding Fleet Operator tell in a most substantial way of the strength, efficiency, light weight, greater capacity, and pleasing appearance of Met-L-Wood Ribless construction and design.

Let us suggest an improvement for your equipment—dictated by your requirements.

**MET-L-WOOD
CORPORATION**
6755 West 65th Street
CHICAGO, ILL.



Trends in Truck Design

(CONTINUED FROM PAGE 29)

a few years ago when the cab-over-engine idea was almost a pipe dream. A few of the heavy-duty makes started the ball rolling and today it's almost universally accepted. Even the ton and half-tonners are in the swim, what with the nice conversion jobs styled by commercial body builders. Although the legislative restrictions that apply to the big jobs don't apply to the little fellows, many fleet operators like the idea of getting some extra loading space on a truck or a much longer loading platform with a tractor-trailer.

When it comes to the small trucks and commercial chassis models, our own experience confirms the proud boast of the engineers that they really have something to shout about. Have you ever stopped to consider what a problem it is to turn out a half-ton or a tonner at practically the price of a passenger car that's made by the million and yet wind up with a job that can really stand the gaff?

This is so true that it's doubtful whether any radical changes or radical improvements are in the offing on the small trucks. There will come the seasonal change in styling and improvements in engines and running gear, but in the main we can't see any big change.

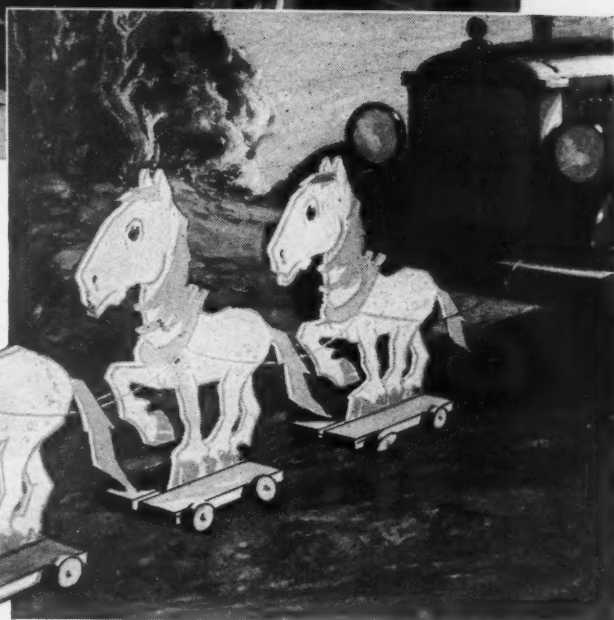
We do see a lot of activity in the larger sizes. And there are plenty of good reasons for this. In the first place, the heavy-duty field has special problems—hauling great loads up to the limit of the law at speeds that the law allows; the need for greater economy; the need for dependability despite the punishment; the demand for

(TURN TO PAGE 60, PLEASE)

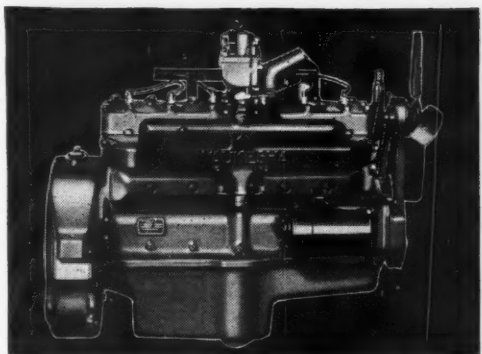


*Sterling Model FB60 Motor Truck powered
with a Waukesha Marathon Six*

**PAPER
HORSEPOWER
HAULS
NO FREIGHT—**



YOU NEED *REAL* HORSEPOWER



**WAUKESHA
ENGINES**

● When there's freight to be hauled—or quick deliveries to be made—paper horsepower “sits down” on the job. The demand for power can't be met with just a rating curve. You must have *real horsepower*—and you can be sure of getting it with the *conservatively rated* Waukesha Engines.

The Waukesha Marathon Six is not “a light six.” It is sturdily built, to stand up in fast ton and two-and-a-half ton speed wagons. It has that Waukesha development, so widely copied in all modern “L” head engines, the Ricardo Combustion Chamber. That means more power, with less fuel. Exclusively Waukesha in design, this engine's intake manifold . . . in combination with the Ricardo Head . . . means real economy in operation and maintenance. For complete details, write for *Bulletin 899*.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

(CONTINUED FROM PAGE 58)

longer life without overhauling; and finally the pressure of lower first cost.

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To meet the operator's needs for

more power and better performance so that the big job can hold its own with anything else on the road, the truck builders have gone to bigger and better powerplants. In fact, they have been getting so much bigger that a lot of time and money is being spent to find ways of getting the desired power and performance out of lighter and smaller engines.

Some engineers are sure that this can be done. One way is to step up engine speed, as is done on passenger cars. Then it is necessary to provide husky bearings and more rigid blocks and shafts and cases to take

the punishments. One of the new truck lines has tackled the problem by putting more money into fine balancing. They do a neat job of balancing connecting rods and pistons—as good a job as the best passenger car—then they go a step further to balance the crankshaft. This is done by adding counterweights and by improving machining and more balancing machine operations. In addition, they put on the front-mounted damper. The net effect of all this is to get a smoother running engine so that despite its higher running speed, it will idle smoothly at low speeds and without any critical rough speeds under load.

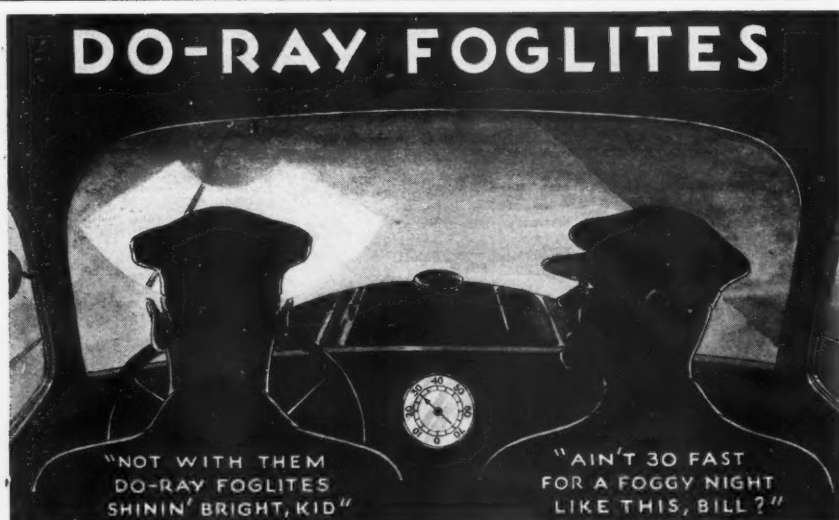
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SPEAKING of engine improvements, many engineers have their eyes on the automatic valve lifter as a means of improving performance, increasing power, and cutting fuel consumption. This is by no means an untried expedient because the Pierce-Arrow, this year's Lincoln, and the entire Cadillac line including LaSalle feature an automatic hydraulic valve lifter for which many great things are claimed. The automatic valve lifter costs more per engine but it does eliminate many valve troubles particularly valve pounding and burning; it gives smoother and silent valve operation without the need for any valve adjustments; it gives an increase in horse power from 5 to 10 per cent and maybe more; and it has shown a measurable increase in fuel economy.

Service life is a lot better than it was some years ago and still more improvement is expected. Fleetmen know the things that have made these improvements possible—hard valve seat inserts, now universally used; better valve materials and special valve materials for the real tough jobs; better engine bearings not only in special materials such as cadmium-silver and copper-lead but in the improved bab-bitt alloys.

Foundrymen are constantly experimenting with special materials such as the nickel-iron alloys for improving the life of cylinder bores and piston assemblies. And now we note an increasing swing, on the big jobs, to replaceable cylinder liners that give in effect a new engine by replacing complete cylinder assemblies. Several different types of liners are available. Some jobs use wet liners where the

(TURN TO PAGE 62, PLEASE)



ABLE TO STOP MEANS ABLE TO GO

No driver is afraid to keep on rambling if he can see far enough ahead to stop in time. Make this true in fog, and fog won't throw your hauls off schedule. With Do-Ray Foglites doing their stuff, your drivers are able to go—because they are able to stop. Thirty to sixty feet of the road is clearly visible, according to the fog's density. With Do-Ray Foglites safe speed is ten miles an hour faster than without them.

But we really don't have to sell you Foglites—you know you'll get your money back from accidents avoided and satisfied customers.

What you want to know about is the kind of Foglites most worth the money. They're Do-Ray, and here's why: the optical engineering in Do-Ray Foglites is correct. It is housed in a heavy steel (or brass) shell with a stainless steel door. The bracket locks immovably and fits all bumpers. The weatherproof cord is 9 feet long. It's the most Foglite for the money. \$5.00 and \$4.00.

Bright-Ray delivers the same flood of glareless amber fog-piercing light, but is a little less in price: \$4.00 and \$3.00.

Do-Ray Junior for passenger cars and light trucks is 5 inches in diameter, uses a 32 candlepower bulb and has 5 feet of cord. In other respects is the same as Bright-Ray and costs \$2.50 and \$3.00.

Ask your jobber



BRIGHT
RAY



AMB-O-
WHITE



JUNIOR

DO-RAY LAMP CO. 1458 S. Michigan Ave., Chicago, Ill.

POWERED TO FIT YOUR JOB . . . PRICED TO FIT YOUR PURSE

**THAT'S WHY FORDS ARE
THE CHOICE OF SO MANY
TRUCK OWNERS**

Some trucks give Performance. Others offer Economy. Ford V-8 Trucks give BOTH!

If your loads are heavy, if your job calls for high road speeds . . . a Ford V-8 Truck or Commercial Car with the 85-horsepower engine will give you outstanding economy for your requirements. If your loads are light, if your units are used for house-to-house delivery . . . the thrifty new 60-horse-

power V-8 engine will give you the performance you need and truly amazing gasoline mileage.

Your Ford dealer will be glad to arrange an "on-the-job" test of an 85 or 60 horsepower Ford V-8 Truck or Commercial Car. With your own loads, under your own operating conditions, you can test BOTH V-8 engines . . . and select the one best fitted for your individual needs. Before you buy ANY truck or commercial car at ANY price, make this test. It may mean the difference between high and low operating costs. Call your Ford dealer today for full details.

Convenient, economical terms
through the Authorized Ford Finance
Plans of the Universal Credit Company



FORD V-8 TRUCKS AND COMMERCIAL CARS

COMMERCIAL CAR JOURNAL
May, 1937

(CONTINUED FROM PAGE 60)

liner itself serves as the water jacket. Then there are the "dry" liners where the liner is pressed into a finely finished cylinder bore and may be replaced after a long period of service.

One of the new lines of engines has very hard, heat-treated dry liners supposed to be good for at least 200,000 miles before replacing.

For very big engines, there is always a possibility of cutting weight and thus boosting the payload by making the block of a light material such as aluminum and then using hardened valve

inserts and cylinder liners to do the heavy work.

CONSIDERING the other units of the truck we note that the tendency is more and more to synchromesh transmissions because of the ease of shifting and freedom from even accidental clashing. Heavy-duty trucks offer many kinds of options on transmissions to take care of almost any conceivable operating conditions. They start with a four-speed transmission then you can have five-speed with overdrive or underdrive, or you can have four or five speeds in combination with a two-speed

transfer gear box. You can just about get what you want in this respect.

Transmission options are combined with axle options to complete the picture. Apart from a choice of primary axle ratios, there is a choice of two-speed or double-reduction axles.

It seems in the cards that some form of automatic control will eventually find favor on the motor truck. True, there is nothing new about the pneumatic control of clutch and transmission operation. However many improvements have been made recently.

Fuel economy is wanted above many other things on any size of truck. On the small trucks economy may be had by taking advantage of the economy packages made available by certain producers such as Ford, Chevrolet, and Plymouth. However, it is realized by the fleetman that he is dealing with a very economical unit to begin with, and any further economy involves some loss in performance.

On heavy-duty equipment there is more latitude in fuel economy. Some operators have found it economical to use diesel power. For jobs that are used less intensively there is the prospect of fuel economy in the use of fuel converters which permit the burning of fuel oil in the gasoline engine. Several very promising fuel converters are going through development stages and should be available shortly.

Solid fuel injection for gasoline engines constitutes direct competition for the diesel engine and seems to offer a happy solution wherever the diesel installation may not be justified on economic grounds. Speaking of diesel power, at least one domestic truck builder has adopted a small diesel for light tonnage models.

AMONG the mechanical developments contributing to improved performance and fuel economy is the special high heat conductivity cylinder heads. During the past year there has been a considerable activity along this front—aluminum heads, special composite heads, copper heads, etc. Although higher in first cost, it is claimed that the special heads increase power and reduce fuel consumption sufficiently to make money for the fleetman.

Finally we may sum up the whole situation by saying that even with our spy-glass we fail to see evidence of any radical moves in truck design in the near future. What is more important, however, is the fact that great improvements are in the cards and when they mean better performance, longer service life, and improved operating costs—they mean dollars and cents to the fleetman.

PROOF OF TRAILER QUALITY

TIMKEN



"T" Series
BRAKE

This simple, effective brake in a trailer's specifications is definite proof that the trailer builder aimed at eliminating brake problems and cutting service costs.

It is rattle-proof, rust-proof, as completely trouble-proof as a brake can be. Timken Adjustable Levers provide twist-of-wrist adjustment.

Designed for Vacuum Power unit or Air Brake operation.

TIMKEN "T" SERIES BRAKE



THE TIMKEN-**CO** DETROIT AXLE COMPANY, Detroit, Mich.

High Compression?

What's that to
my fleet?



Here's the truthful answer to all skeptics

THE whole truth about high compression can be stated briefly:

By increasing the compression ratio of the engine, you get more power out of every gallon of fuel because of increased engine efficiency.

Since 1934, when regular grade gasoline of high anti-knock value (containing lead tetraethyl) was made available universally, commercial vehicle designers have utilized this opportunity for power gain by designing high compression engines.

You can increase your operating efficiency by using that added power in one of two ways:

1. FASTER SCHEDULES. The added power of high compression gets vehicles up hills faster, permits operation in higher gears, moves the same load faster.

2. BIGGER PAYLOADS. If faster schedules are not desired, the added power can be used to carry larger payloads, because increasing horsepower through high compression adds nothing to engine or chassis weight.

Whether you have low compression or high compression engines in your present fleet of trucks or buses, find out the gains you can make by taking full advantage of high compression. We welcome inquiries about the relation of fuels to the efficiency of your truck and bus engines. Ethyl Gasoline Corporation, Dept. A, Chrysler Building, New York, manufacturers of anti-knock fluids for premium and regular gasolines.

HIGH COMPRESSION ADDS MORE POWER

Crankcase Solids Tip Off on Oil Change

(CONTINUED FROM PAGE 34)

towing. In truck designated as "A" the old oil was merely drained and a fresh charge put in, while truck "B" had the oil pan dropped and the interior of the engine thoroughly cleaned and washed down with flushing oil before renewing the oil. These two trucks were operated on the same job covering within a mile of like distances each day and to eliminate driver influence, one man handled "A" one day and "B" the next while his mate alternated with him.

In the curves of the table it can be seen that the sludge and solid particles deposited within the engine of truck "A" result in an almost immediate rise in the percentage of foreign matter while truck "B" shows a gradual increase in pollution.

To obtain figures showing the effect of winch operation a third truck "C" with a speedometer reading of 13,173 miles was chosen. The table shows in addition to crankcase pollution for truck "C" the miles driven and the number of hours of winch operation each day. These figures were taken from the driver's report when he turned the truck in at the close of the day.

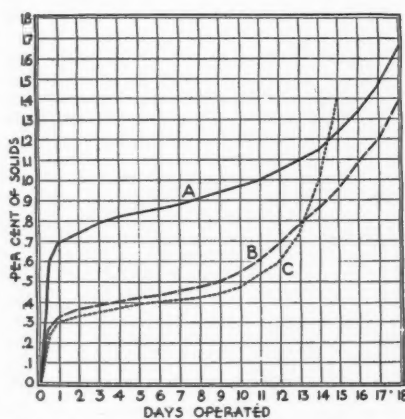
Beginning the eighth day after the oil change truck "C" was switched from the job of handling a field gang to and from work to backfilling with winch and "go devil" 1.85 miles of pipe line trench 34 in. wide and 7 ft. deep. The material handled was stiff wet clay. The effect of this severe service on the engine running steadily an average of 14 hours per day with the backfiller men taking at each bite of the "go devil" all the winch could drag, quickly shows up in the centrifuge glass although truck mileage was cut to less than half of that earlier in the check up.

TESTS to determine crankcase oil condition were made after the trucks returned to the garage at night. A syringe with a bulb was fitted with a long tube to insert through the usual type of bayonet type oil depth gage aperture. This sample carried a spur at the tip of the suction tube to rest on the bottom of the engine pan so that all samples would be drawn from the same level, one half inch above the bottom. This made it possible to avoid bringing up any sludge accumulation which might rest on the bottom and thus give a high and unfair percentage of solids.

The sample for the "shake out" or centrifuge test is mixed in the glass container in which it is to be whirled, with an equal amount of clear gasoline.

TABLE I
PERCENTAGE OF SOLIDS IN CRANKCASE OIL

Days Run	Motor Number			Truck "C"	
	"A"	"B"	"C"	Miles Driven	Hours Winching
0	0.00	0.00	0.00	0.0	0.0
1/2	0.59	0.26	0.23	42.8	1.5
1	0.69	0.32	0.30	51.7	1.4
2	0.74	0.36	0.33	63.1	2.1
3	0.79	0.38	0.35	37.5	1.0
4	0.82	0.40	0.37	49.1	3.3
5	0.84	0.42	0.39	72.2	0.5
6	0.86	0.43	0.40	38.8	1.7
7	0.88	0.45	0.41	23.9	2.3
8	0.91	0.47	0.42	22.0	10.5
9	0.94	0.50	0.44	23.4	14.5
10	0.97	0.55	0.47	23.8	14.8
11	1.00	0.61	0.53	22.7	13.6
12	1.05	0.69	0.60	22.6	15.1
13	1.10	0.78	0.74	23.5	14.4
14	1.15	0.86	1.00	23.8	14.0
15	1.24	0.96	1.43	23.7	14.9
16	1.34	1.09			
17	1.47	1.20			
18	1.65	1.38			



The above chart indicates the per cent of solid deposited by days of operation in trucks "A", "B" and "C." Top—This table gives the same data for winch operated trucks

The mixture is heated to a temperature of 140 deg. Fahr. in a water bath. It is then revolved at 1500 r.p.m. for 10 to 20 minutes.

On the basis of the showings in the tests this company has changed its schedule of oil renewal from a plan relying upon either miles or hours of operation to one calling for a change of oil when the percentage of solids shaken out amount to a specified figure. For the service that these trucks are engaged in the percentage decided upon was 1.00 per cent.

NOW that the experimental work has been done the maintenance procedure is roughly this. Each truck has had a test and to determine the subsequent changes the tests begin a day or two in advance of a typical break in that truck's solids curve. For instance, if a truck showed a fairly even rise in percentage of solids for ten days when the original test was made, in service the tests would start 9 days after the oil change. After the tests have started on any given engine they continue daily until the foreign matter reaches a point where a change is indicated.

The night man in the garage is given a schedule of truck engines to be tested by him during the night and he samples the oil and runs the "shake out" on it, enters the figure opposite the truck number and proceeds to the next truck. The entire operation of sampling an engine's oil, heating the sample and whirling it until an accurate solids determination can be made takes about 8 minutes per sample. This is divided into three minutes for sampling and heating and 20 minutes centrifuge time but since the centrifuge carries four samples at once the centrifuge time per sample is 5 minutes.

Previous to the use of these tests the oil was changed in the trucks at 1500 miles if the engine was equipped with an oil filter and at 1000 miles if it was not. Since putting the change of oil on a centrifuge basis the oil is changed at generally less mileage than previously.

THERE has been a marked decrease in piston, cylinder and ring wear although due to the fact that the system was adopted when a number of old engines were in service it is impossible to estimate the savings accurately or point to one unit as being an example. The increase in engine parts life is noticeable through the amount of replacement parts carried in stock.

The only other test made on the oil is a gravity test with a hydrometer if the depth gage shows over the full mark. In this case dilution is suspected and the oil is tested to determine the presence and amount of condensed gasoline. An unexpected but quite logical sequence to the checking of crankcase oils on the basis of solids was the close relationship between the amount of solids found and the condition of the piston rings. A rapid accumulation of solids in the oil being a sure indication that the rings need replacement.

GM Diesel Engine Division

General Motors Corp. has formed a new division, the Diesel Engine Division, for the manufacture of Winton diesels beginning with 20 hp. single-cylinder units up to a 160 hp. six-cylinder engine. A new plant is being erected in Detroit where the engines will be made. W. T. Crowe has been appointed general manager of the new division.

EXPANSIONS

CHEVROLET division of General Motors has completed plans for construction of a plant to be put in operation at Buffalo by the first of next year for the construction of axles and engines. Plans call for a daily production of 1200 motors and axles. DEVILBISS CO., Toledo, Ohio, will expand its rubber products division by erecting a new plant on Lagrange St., in Toledo.

Trucks in Hollywood

(CONTINUED FROM PAGE 31)

reciprocity and make ourselves a market for the world.

Incidentally, let me here explode the fancy that money is thrown away in making motion pictures. Our department operates on a very tight budget and, as in any other business, we must keep within that budget or produce very good explanations for exceeding it.

THIS budget must be broken down to spread over a year's shooting, which means that when we have a run of difficult pictures it is often necessary to reach for the aspirin bottle. We fill some very large and tough orders for equipment to appear in pictures, in addition to the regular routine of transportation.

Ever see a 1936 model French Taxi cab? Or a "back-door entrance" American car, vintage 1900? Do you know exactly what a low-priced American car would look like after a trip across the Gobi Desert? What kind of trucks are used at British outposts in India? What kinds of automobiles are attached to the Royal Household of the Son of Heaven?

Those are a few of the questions calculated to put a dent into transportation's budget. Even though the trucks or cars merely flash across the screen they must be authentic in appearance because movie-goers delight in calling mistakes to our attention.

After a story is written it goes to the Research Department and it is the duty of that department to supply us with a photograph or drawing of any extraordinary car or truck that is to appear in the story. Then all we have to do is to supply the vehicle.

This often means building or remodeling a unit we have on hand. For example, there are no French taxicabs, 1936 models, in Hollywood. But a De Soto with a special-built hood and a two-tone paint job produces a dead ringer for the cab. In other instances it has been necessary to go right down to the chassis and build up a new body. These must be ready when shooting starts; it costs between \$8000 and \$10000 per day to shoot an ordinary feature picture and it is obvious that such a sum cannot be held up for a mere \$300 body job.

In every instance where cars or trucks appear in pictures there must be some authenticating and we must fill the order. For instance, a dock yard scene must have a variety of trucks loading and unloading. If we used all of one make every mechanic

in the audiences seeing the picture would have his enjoyment disturbed by the lack of realism in the scene.

In smash-up scenes we purchase cars or trucks for the purpose. These are driven by stunt men who usually do a thoroughly good job of the wreck. A major studio will buy perhaps a thousand dollars worth of equipment for a smash-up in one picture, which same equipment will be sold back to the dealer a half hour later for four or five hundred dollars.

THE above account covers our role in actual pictures, and answers most

questions that are first asked us. Our every-day work also contains a number of features which interest visitors. Chief among these features is the resemblance a picture lot bears to a small city, perhaps a dozen cities within a city. The hulking sound stages are the "industrial section" and along the fringes are streets made to resemble mining towns, cow camps, Chinese villages, New York apartment house districts, and dozens of other far-flung places.

Tractor-trailers are used for hauling almost everything on the lot proper. (TURN TO PAGE 68, PLEASE)

NEW

"Van Dorn"

6" JUNIOR BENCH GRINDER

ONLY \$19.95

See it at your jobber's—or write for catalog.
The Van Dorn Electric Tool Co.,
732 Joppa Road, Towson, Md.
(Div. of Black & Decker Mfg. Co.)

APPROPRIATE EQUIPMENT
THIS IS THE PLAN

Labels on the grinder image:

- EASY GRIP HANDLE
- 1/4 H.P. MOTOR
- BALANCED ROTOR ON BALL BEARINGS
- COARSE AND FINE GRINDING WHEELS
- 3-CONDUCTOR RUBBER COVERED CABLE & PLUG
- NON-SLIP RUBBER FEET
- TOOL RESTS ADJUSTABLE AND REMOVABLE
- BEARINGS COVERED WITH DUST PROOF SLEEVES
- LIGHT, STURDY ALLOY HOUSING

Ford Brake Adjustment

(CONTINUED FROM PAGE 28)

8. Lock anchor pin with shoes in this position by tightening lock nut "A." Then back off on adjusting screw at "D" and remove wheel, remove shim stock and reinstall wheel. Repeat operation at all wheels.

(Steps 5 to 8 inclusive can be performed using a brake concentricity gage. If this equipment is used it is possible to see the .005-in. clearance at the anchor. There is a special gage supplied by Ford which will make it pos-

sible to check and adjust the anchor to a standard brake drum. This equipment furnished by other equipment manufacturers is adjustable for brake drum size.)

9. Check position of brake cross shaft operating levers. Front brake cable operating lever should be resting against bottom of cross shaft bracket. If not, pedal to cross shaft rod clevis should be adjusted accordingly. Be sure that hand brake cable is not too short so that it holds the cross shaft out of position.

10. Run adjusting screw at operating wedge D (Fig. 11) in until shoes are tight in drums.

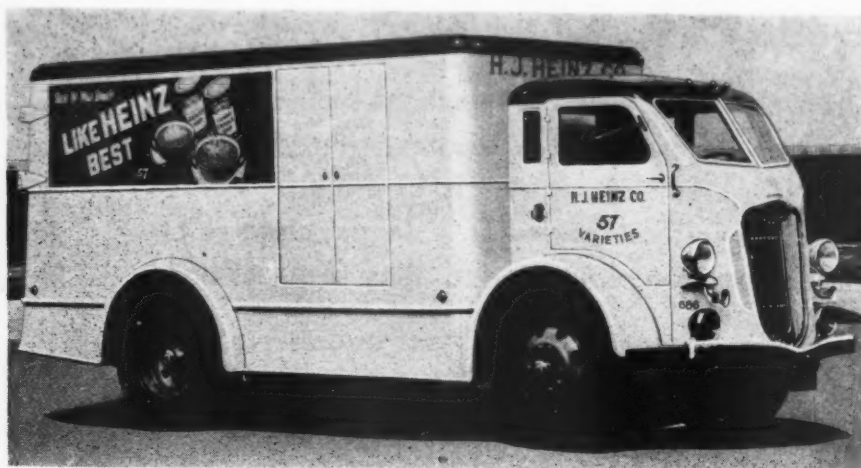
11. Adjust each cable clevis so that pin can be installed with cables pulled. (Ford recommends a 25-lb. pull on the cables and has equipment available for pulling and measuring pull.)

12. Back off on adjusting screw D (Fig. 11) until drag is removed. Repeat operations 10-12 on all wheels.

13. Apply hand brake to first notch and check wheels for even drag. If not even, back off on tight wheels to equalize.

14. For good results it is essential that brake springs be replaced according to color scheme shown in photograph and that all parts be well lubricated.

The 1½-ton truck will continue to have only the single brake shoe adjustment and the brake shoes are not cable operated.



EXPERIENCE LEADS TO MET-L-WOOD

The opinion of the man who has tried many types of construction counts more because his greater experience makes possible a better comparison.

H. J. Heinz Company have exacting requirements, and have tried different constructions in an endeavor to get the BEST equipment for their use.

We feel that the many Repeat Orders given us by this outstanding Fleet Operator tell in a most substantial way of the strength, efficiency, light weight, greater capacity, and pleasing appearance of Met-L-Wood Ribless construction and design.

Let us suggest an improvement for your equipment—dictated by your requirements.

**MET-L-WOOD
CORPORATION**
6755 West 65th Street
CHICAGO, ILL.



Trends in Truck Design

(CONTINUED FROM PAGE 29)

a few years ago when the cab-over-engine idea was almost a pipe dream. A few of the heavy-duty makes started the ball rolling and today it's almost universally accepted. Even the ton and half-tonners are in the swim, what with the nice conversion jobs styled by commercial body builders. Although the legislative restrictions that apply to the big jobs don't apply to the little fellows, many fleet operators like the idea of getting some extra loading space on a truck or a much longer loading platform with a tractor-trailer.

When it comes to the small trucks and commercial chassis models, our own experience confirms the proud boast of the engineers that they really have something to shout about. Have you ever stopped to consider what a problem it is to turn out a half-ton or a tonner at practically the price of a passenger car that's made by the million and yet wind up with a job that can really stand the gaff?

This is so true that it's doubtful whether any radical changes or radical improvements are in the offing on the small trucks. There will come the seasonal change in styling and improvements in engines and running gear, but in the main we can't see any big change.

We do see a lot of activity in the larger sizes. And there are plenty of good reasons for this. In the first place, the heavy-duty field has special problems—hauling great loads up to the limit of the law at speeds that the law allows; the need for greater economy; the need for dependability despite the punishment; the demand for

(TURN TO PAGE 60, PLEASE)

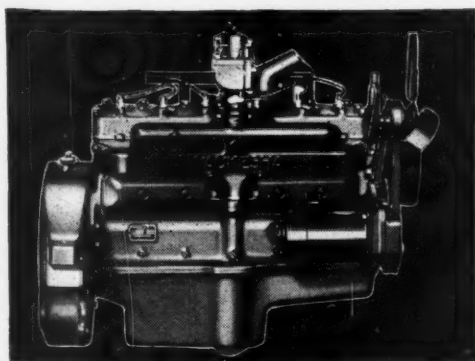


Sterling Model FB60 Motor Truck powered with a Waukesha Marathon Six

**PAPER
HORSEPOWER
HAULS
NO FREIGHT—**



YOU NEED *REAL* HORSEPOWER



**WAUKESHA
ENGINES**

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WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

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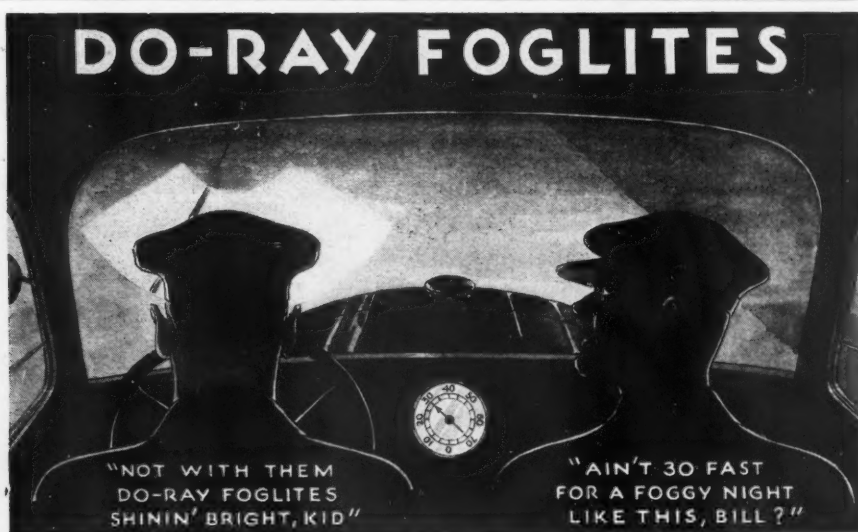
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(TURN TO PAGE 62, PLEASE)

COMMERCIAL CAR JOURNAL
MAY, 1937



ABLE TO STOP MEANS ABLE TO GO

No driver is afraid to keep on rambling if he can see far enough ahead to stop in time. Make this true in fog, and fog won't throw your hauls off schedule. With Do-Ray Foglites doing their stuff, your drivers are able to go—because they are able to stop. Thirty to sixty feet of the road is clearly visible, according to the fog's density. With Do-Ray Foglites safe speed is ten miles an hour faster than without them.

But we really don't have to sell you Foglites—you know you'll get your money back from accidents avoided and satisfied customers.

What you want to know about is the kind of Foglites most worth the money. They're Do-Ray, and here's why: the optical engineering in Do-Ray Foglites is correct. It is housed in a heavy steel (or brass) shell with a stainless steel door. The bracket locks immovably and fits all bumpers. The weatherproof cord is 9 feet long. It's the most Foglite for the money. \$5.00 and \$4.00.

Bright-Ray delivers the same flood of glareless amber fog-piercing light, but is a little less in price: \$4.00 and \$3.00.

Do-Ray Junior for passenger cars and light trucks is 5 inches in diameter, uses a 32 candlepower bulb and has 5 feet of cord. In other respects is the same as Bright-Ray and costs \$2.50 and \$3.00.

Ask your jobber

DO-RAY LAMP CO. 1458 S. Michigan Ave., Chicago, Ill.



BRIGHT
RAY



AMB-O-
WHITE



JUNIOR

POWERED TO FIT YOUR JOB . . . PRICED TO FIT YOUR PURSE

**THAT'S WHY FORDS ARE
THE CHOICE OF SO MANY
TRUCK OWNERS**

Some trucks give Performance. Others offer Economy. Ford V-8 Trucks give BOTH!

If your loads are heavy, if your job calls for high road speeds . . . a Ford V-8 Truck or Commercial Car with the 85-horsepower engine will give you outstanding economy for your requirements. If your loads are light, if your units are used for house-to-house delivery . . . the thrifty new 60-horse-

power V-8 engine will give you the performance you need and truly amazing gasoline mileage.

Your Ford dealer will be glad to arrange an "on-the-job" test of an 85 or 60 horsepower Ford V-8 Truck or Commercial Car. With your own loads, under your own operating conditions, you can test BOTH V-8 engines . . . and select the one best fitted for your individual needs. Before you buy ANY truck or commercial car at ANY price, make this test. It may mean the difference between high and low operating costs. Call your Ford dealer today for full details.

Convenient, economical terms
through the Authorized Ford Finance
Plans of the Universal Credit Company



FORD V-8 TRUCKS AND COMMERCIAL CARS

COMMERCIAL CAR JOURNAL
MAY, 1937

(CONTINUED FROM PAGE 60)

liner itself serves as the water jacket. Then there are the "dry" liners where the liner is pressed into a finely finished cylinder bore and may be replaced after a long period of service.

One of the new lines of engines has very hard, heat-treated dry liners supposed to be good for at least 200,000 miles before replacing.

For very big engines, there is always a possibility of cutting weight and thus boosting the payload by making the block of a light material such as aluminum and then using hardened valve

inserts and cylinder liners to do the heavy work.

CONSIDERING the other units of the truck we note that the tendency is more and more to synchromesh transmissions because of the ease of shifting and freedom from even accidental clashing. Heavy-duty trucks offer many kinds of options on transmissions to take care of almost any conceivable operating conditions. They start with a four-speed transmission then you can have five-speed with overdrive or underdrive, or you can have four or five speeds in combination with a two-speed

transfer gear box. You can just about get what you want in this respect.

Transmission options are combined with axle options to complete the picture. Apart from a choice of primary axle ratios, there is a choice of two-speed or double-reduction axles.

It seems in the cards that some form of automatic control will eventually find favor on the motor truck. True, there is nothing new about the pneumatic control of clutch and transmission operation. However many improvements have been made recently.

Fuel economy is wanted above many other things on any size of truck. On the small trucks economy may be had by taking advantage of the economy packages made available by certain producers such as Ford, Chevrolet, and Plymouth. However, it is realized by the fleetman that he is dealing with a very economical unit to begin with, and any further economy involves some loss in performance.

On heavy-duty equipment there is more latitude in fuel economy. Some operators have found it economical to use diesel power. For jobs that are used less intensively there is the prospect of fuel economy in the use of fuel converters which permit the burning of fuel oil in the gasoline engine. Several very promising fuel converters are going through development stages and should be available shortly.

Solid fuel injection for gasoline engines constitutes direct competition for the diesel engine and seems to offer a happy solution wherever the diesel installation may not be justified on economic grounds. Speaking of diesel power, at least one domestic truck builder has adopted a small diesel for light tonnage models.

AMONG the mechanical developments contributing to improved performance and fuel economy is the special high heat conductivity cylinder heads. During the past year there has been a considerable activity along this front—aluminum heads, special composite heads, copper heads, etc. Although higher in first cost, it is claimed that the special heads increase power and reduce fuel consumption sufficiently to make money for the fleetman.

Finally we may sum up the whole situation by saying that even with our spy-glass we fail to see evidence of any radical moves in truck design in the near future. What is more important, however, is the fact that great improvements are in the cards and when they mean better performance, longer service life, and improved operating costs—they mean dollars and cents to the fleetman.

PROOF OF TRAILER QUALITY

TIMKEN



"T" Series BRAKE

This simple, effective brake in a trailer's specifications is definite proof that the trailer builder aimed at eliminating brake problems and cutting service costs.

It is rattle-proof, rust-proof, as completely trouble-proof as a brake can be. Timken Adjustable Levers provide twist-of-wrist adjustment.

Designed for Vacuum Power unit or Air Brake operation.

TIMKEN "T" SERIES BRAKE



THE TIMKEN-DETROIT AXLE COMPANY, Detroit, Mich.

High Compression?

What's that to
my fleet?



Here's the truthful answer to all skeptics

THE whole truth about high compression can be stated briefly:

By increasing the compression ratio of the engine, you get more power out of every gallon of fuel because of increased engine efficiency.

Since 1934, when regular grade gasoline of high anti-knock value (containing lead tetraethyl) was made available universally, commercial vehicle designers have utilized this opportunity for power gain by designing high compression engines.

You can increase your operating efficiency by using that added power in one of two ways:

1. FASTER SCHEDULES. The added power of high compression gets vehicles up hills faster, permits operation in higher gears, moves the same load faster.

2. BIGGER PAYLOADS. If faster schedules are not desired, the added power can be used to carry larger payloads, because increasing horsepower through high compression adds nothing to engine or chassis weight.

Whether you have low compression or high compression engines in your present fleet of trucks or buses, find out the gains you can make by taking full advantage of high compression. We welcome inquiries about the relation of fuels to the efficiency of your truck and bus engines. Ethyl Gasoline Corporation, Dept. A, Chrysler Building, New York, manufacturers of anti-knock fluids for premium and regular gasolines.

HIGH COMPRESSION ADDS MORE POWER

Crankcase Solids Tip Off on Oil Change

(CONTINUED FROM PAGE 34)

towing. In truck designated as "A" the old oil was merely drained and a fresh charge put in, while truck "B" had the oil pan dropped and the interior of the engine thoroughly cleaned and washed down with flushing oil before renewing the oil. These two trucks were operated on the same job covering within a mile of like distances each day and to eliminate driver influence, one man handled "A" one day and "B" the next while his mate alternated with him.

In the curves of the table it can be seen that the sludge and solid particles deposited within the engine of truck "A" result in an almost immediate rise in the percentage of foreign matter while truck "B" shows a gradual increase in pollution.

To obtain figures showing the effect of winch operation a third truck "C" with a speedometer reading of 13,173 miles was chosen. The table shows in addition to crankcase pollution for truck "C" the miles driven and the number of hours of winch operation each day. These figures were taken from the driver's report when he turned the truck in at the close of the day.

Beginning the eighth day after the oil change truck "C" was switched from the job of handling a field gang to and from work to backfilling with winch and "go devil" 1.85 miles of pipe line trench 34 in. wide and 7 ft. deep. The material handled was stiff wet clay. The effect of this severe service on the engine running steadily an average of 14 hours per day with the backfiller men taking at each bite of the "go devil" all the winch could drag, quickly shows up in the centrifuge glass although truck mileage was cut to less than half of that earlier in the check up.

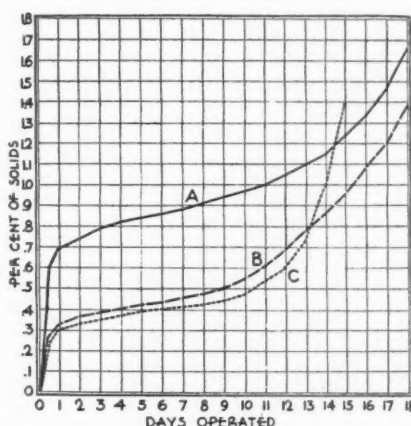
TESTS to determine crankcase oil condition were made after the trucks returned to the garage at night. A syringe with a bulb was fitted with a long tube to insert through the usual type of bayonet type oil depth gage aperture. This sample carried a spur at the tip of the suction tube to rest on the bottom of the engine pan so that all samples would be drawn from the same level, one half inch above the bottom. This made it possible to avoid bringing up any sludge accumulation which might rest on the bottom and thus give a high and unfair percentage of solids.

The sample for the "shake out" or centrifuge test is mixed in the glass container in which it is to be whirled, with an equal amount of clear gasoline.

TABLE I

PERCENTAGE OF SOLIDS IN CRANKCASE OIL

Days Run	Motor Number			Truck "C"	
	"A"	"B"	"C"	Miles Driven	Hours Winching
0	0.00	0.00	0.00	0.0	0.0
1/2	0.89	0.28	0.23	42.8	1.5
1	0.89	0.32	0.30	51.7	1.4
2	0.74	0.36	0.33	63.1	2.1
3	0.79	0.38	0.35	37.5	1.0
4	0.82	0.40	0.37	49.1	3.3
5	0.84	0.42	0.39	72.2	0.5
6	0.86	0.43	0.40	38.8	1.7
7	0.88	0.45	0.41	23.9	2.3
8	0.81	0.47	0.42	22.0	10.5
9	0.94	0.50	0.44	23.4	14.5
10	0.97	0.55	0.47	23.8	14.8
11	1.00	0.61	0.53	22.7	13.6
12	1.05	0.69	0.60	22.6	15.1
13	1.10	0.78	0.74	23.5	14.4
14	1.15	0.88	1.00	23.8	14.0
15	1.24	0.96	1.43	23.7	14.9
16	1.34	1.09			
17	1.47	1.20			
18	1.65	1.38			



The above chart indicates the per cent of solid deposited by days of operation in trucks "A", "B" and "C." Top—This table gives the same data for winch operated trucks

The mixture is heated to a temperature of 140 deg. Fahr. in a water bath. It is then revolved at 1500 r.p.m. for 10 to 20 minutes.

On the basis of the showings in the tests this company has changed its schedule of oil renewal from a plan relying upon either miles or hours of operation to one calling for a change of oil when the percentage of solids shaken out amount to a specified figure. For the service that these trucks are engaged in the percentage decided upon was 1.00 per cent.

NOW that the experimental work has been done the maintenance procedure is roughly this. Each truck has had a test and to determine the subsequent changes the tests begin a day or two in advance of a typical break in that truck's solids curve. For instance, if a truck showed a fairly even rise in percentage of solids for ten days when the original test was made, in service the tests would start 9 days after the oil change. After the tests have started on any given engine they continue daily until the foreign matter reaches a point where a change is indicated.

The night man in the garage is given a schedule of truck engines to be tested by him during the night and he samples the oil and runs the "shake out" on it, enters the figure opposite the truck number and proceeds to the next truck. The entire operation of sampling an engine's oil, heating the sample and whirling it until an accurate solids determination can be made takes about 8 minutes per sample. This is divided into three minutes for sampling and heating and 20 minutes centrifuge time but since the centrifuge carries four samples at once the centrifuge time per sample is 5 minutes.

Previous to the use of these tests the oil was changed in the trucks at 1500 miles if the engine was equipped with an oil filter and at 1000 miles if it was not. Since putting the change of oil on a centrifuge basis the oil is changed at generally less mileage than previously.

THERE has been a marked decrease in piston, cylinder and ring wear although due to the fact that the system was adopted when a number of old engines were in service it is impossible to estimate the savings accurately or point to one unit as being an example. The increase in engine parts life is noticeable through the amount of replacement parts carried in stock.

The only other test made on the oil is a gravity test with a hydrometer if the depth gage shows over the full mark. In this case dilution is suspected and the oil is tested to determine the presence and amount of condensed gasoline. An unexpected but quite logical sequence to the checking of crankcase oils on the basis of solids was the close relationship between the amount of solids found and the condition of the piston rings. A rapid accumulation of solids in the oil being a sure indication that the rings need replacement.

GM Diesel Engine Division

General Motors Corp. has formed a new division, the Diesel Engine Division, for the manufacture of Winton diesels beginning with 20 hp. single-cylinder units up to a 160 hp. six-cylinder engine. A new plant is being erected in Detroit where the engines will be made. W. T. Crowe has been appointed general manager of the new division.

EXPANSIONS

CHEVROLET division of General Motors has completed plans for construction of a plant to be put in operation at Buffalo by the first of next year for the construction of axles and engines. Plans call for a daily production of 1200 motors and axles. DEVILBISS CO., Toledo, Ohio, will expand its rubber products division by erecting a new plant on Lagrange St., in Toledo.

Trucks in Hollywood

(CONTINUED FROM PAGE 31)

reciprocity and make ourselves a market for the world.

Incidentally, let me here explode the fancy that money is thrown away in making motion pictures. Our department operates on a very tight budget and, as in any other business, we must keep within that budget or produce very good explanations for exceeding it.

THIS budget must be broken down to spread over a year's shooting, which means that when we have a run of difficult pictures it is often necessary to reach for the aspirin bottle. We fill some very large and tough orders for equipment to appear in pictures, in addition to the regular routine of transportation.

Ever see a 1936 model French Taxi cab? Or a "back-door entrance" American car, vintage 1900? Do you know exactly what a low-priced American car would look like after a trip across the Gobi Desert? What kind of trucks are used at British outposts in India? What kinds of automobiles are attached to the Royal Household of the Son of Heaven?

Those are a few of the questions calculated to put a dent into transportation's budget. Even though the trucks or cars merely flash across the screen they must be authentic in appearance because movie-goers delight in calling mistakes to our attention.

After a story is written it goes to the Research Department and it is the duty of that department to supply us with a photograph or drawing of any extraordinary car or truck that is to appear in the story. Then all we have to do is to supply the vehicle.

This often means building or remodeling a unit we have on hand. For example, there are no French taxicabs, 1936 models, in Hollywood. But a De Soto with a special-built hood and a two-tone paint job produces a dead ringer for the cab. In other instances it has been necessary to go right down to the chassis and build up a new body. These must be ready when shooting starts; it costs between \$8000 and \$10000 per day to shoot an ordinary feature picture and it is obvious that such a sum cannot be held up for a mere \$300 body job.

In every instance where cars or trucks appear in pictures there must be some authenticating and we must fill the order. For instance, a dock yard scene must have a variety of trucks loading and unloading. If we used all of one make every mechanic

in the audiences seeing the picture would have his enjoyment disturbed by the lack of realism in the scene.

In smash-up scenes we purchase cars or trucks for the purpose. These are driven by stunt men who usually do a thoroughly good job of the wreck. A major studio will buy perhaps a thousand dollars worth of equipment for a smash-up in one picture, which same equipment will be sold back to the dealer a half hour later for four or five hundred dollars.

THE above account covers our role in actual pictures, and answers most

questions that are first asked us. Our every-day work also contains a number of features which interest visitors. Chief among these features is the resemblance a picture lot bears to a small city, perhaps a dozen cities within a city. The hulking sound stages are the "industrial section" and along the fringes are streets made to resemble mining towns, cow camps, Chinese villages, New York apartment house districts, and dozens of other far-flung places.

Tractor-trailers are used for hauling almost everything on the lot proper, (TURN TO PAGE 68, PLEASE)

NEW

"Van Dorn"

6" JUNIOR

BENCH GRINDER

ONLY \$19⁹⁵

See it at your jobber's—or write for catalog.
The Van Dorn Electric Tool Co.,
732 Joppa Road, Towson, Md.
(Div. of Black & Decker Mfg. Co.)

STANDARD SAFETY
THE PATENT PLAN

(CONTINUED FROM PAGE 67)

the tractors also working in tearing down and construction of new sets. Motor cycles carry inter-departmental communications, supplemented by bicycles. Light panel and stake jobs handle "props"—furniture, drapes, light fixtures, and everything that goes into a set. Our fire engines and ambulances are attached to their respective departments, and also work in pictures. In sum, Warner's Brothers lot is a city of 5,000 population.

"Location shooting" places some extraordinary demands on the Transportation Department. Almost every pic-

ture contains a number of location sequences; the word means anything shot off the lot proper.

However, there is always a mad search on for new locations and we are yearly going farther afield as nearby places become familiar to movie audiences. At this writing our farthest company is on location at Yuma, Ariz. But the word "location" covers any sequences taken off the lot—for instance if a sequence was filmed in the street that runs outside the studio that would be "location."

An average location requires the use of approximately thirty units. About

two-thirds of all exterior views used at Warner Bros.-First National are shot off the lot. Location is established as follows: After a story goes through Research, a Location Man travels out to find backgrounds in keeping with the Research Department's ideas. Wherever he finds them, there we must go.

If he finds his backgrounds close to concrete we are happy. Most often he finds the "ideal" location from ten to twenty miles off any sort of roadway. A recent location was established at Lasky Mesa, thirty-six miles away. The day before we were to start our back haul from this location it started to rain. After a day's down pour our equipment could get nowhere near the Mesa. We put a watchman on duty and had to carry his supplies in on horse back. Within a few days the ground dried sufficiently to move out. That is a good demonstration of the terrain our trucks must cover.

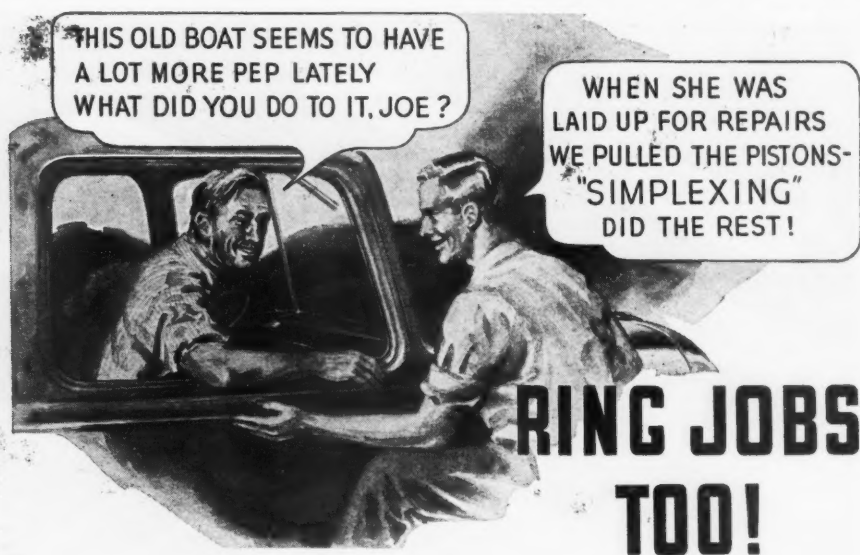
Our drivers must be expert at snaking heavy equipment over open country. Salvation lies in the fact that so many units are necessary for location shooting, that we travel in a "herd." It is a sight to see five or ten trucks gingerly towing a bogged companion out of his mess.

In riding about Southern California one sees numerous places where tire tracks leave the highway and hit across country as far as the eye can see. If you should follow up one of these tracks, curious to know what darn-fool truckers have been drinking, at the end the chances are you would find a serious lot of people engaged in the job of shooting a picture.

There is a very definite hierarchy established among drivers in these location jaunts. The most experienced (oldest in service) driver will be found on the first unit, the next oldest on the next unit, and so on down to the tail-enders. Sometimes it is necessary to hold a general consultation regarding the best way to get around or over a depression or hill looming ahead. However, the general absence of brush and thick growths, seldom over three feet in height in Southern California, enables us to find a way around or through obstacles. Lava formations wreck tires but do not greatly interfere with snaking to location.

While a location unit does not meet the problems of undergrowth found in tropical countries and therefore can always find some way around to location, nevertheless it is important that location units be kept in fine running condition. The mechanical problem is considerable because, as I have pointed out, it costs eight to ten thousand dol-

(TURN TO PAGE 70, PLEASE)



Simplexing Service Adds Motor-Reconditioning to Fleet Repair-Shop Accomplishments

WITHOUT increasing tool or equipment costs, your shop can recondition truck motors as well as the best service shop in existence. Your service man needs only to pull the pistons and phone for Simplexing Service.

HURRY-UP SERVICE

While other truck repairs are being made these pistons will be properly fitted with the famous Simplex Moliu Expander Rings by Simplex experts. This method has cured thousands of cases of oil pumping and compression loss that formerly could be only remedied by costly reboring of cylinders and oversize pistons.

KEEPS TRUCKS YOUNG

The Simplex Moliu method, called Simplexing, keeps trucks young. The Moliu

bearing metal from which these remarkable rings are made is "kind to the throat" of the motor. It will not scour, scar or wear cylinder walls.

Simplexing Service is available in all major marketing centers. Phone the nearest Simplex Distributor just as soon as pistons are pulled.

The expertly fitted pistons will be re-urned ready to shove back in the block—"with the speed of an antelope." Simplexing eliminates for the shop man all fitting, filing, tuming and breakage.

SIMPLEX PRODUCTS CORP.
3816 Kelley Ave., Cleveland, O.



SIMPLEXING
The Simplex Method of Motor Conditioning



**UNFAILING PERFORMANCE
DEPENDS ON SPARK PLUGS**

**YOU CAN DEPEND ON
CHAMPIONS**



To operate profitably, fleet owners must keep their equipment ready to roll at any and all times and under any and all conditions. Such unfailing performance depends to an extraordinary degree on spark plugs.

That you can depend on Champion Spark Plugs to give you this unfailing performance is illustrated by the performance record of the Pacific Greyhound lines.

From mountainous terrain to desert plateaus—across sunlit deserts of scorching heat, through Death Valley 300 feet below sea level, to sea-breeze swept highways—those are the rigorous routes the Pacific Greyhound Coaches travel

and maintain strict schedules. All told their 388 coaches traveled 31,416,954 miles in 1936 and naturally they depended on Champions to give them trouble-free mileage as they have for seven consecutive years.

The Pacific Greyhound Lines are nationally famous as an efficient, dependable operation—and rely on Champions for unfailing performance. You can always depend on Champions—the spark plug champions use.



CHAMPION

EXTRA-RANGE SPARK PLUGS

CHECK AND CLEAN SPARK PLUGS WHEN YOU CHANGE OIL

COMMERCIAL CAR JOURNAL
MAY, 1937

(CONTINUED FROM PAGE 68)

lars per day to film a feature picture and a day lost on location would bring down rightful ire from the front office on our heads.

Men, we find, are our most important asset in forestalling that wrath. I believe our drivers are the best in the world, first because they like motion picture work better than any other kind of driving and, second, because we pay top wages and can therefore command top performance.

Mechanics are likewise the best obtainable and I believe in giving to them full responsibility for proper maintain-

ance—and likewise full credit for their work.

With such a diversified fleet as I have described it is difficult to set up cut-and-dried maintenance procedure and it is here that the element of responsibility of drivers and shopmen enters largely into the picture. Here at Warner Brothers we depend upon a real 1,000-mile inspection system to prevent breakdown.

This operates as follows: Speedometers on new trucks are set at all-zero and are greased and oiled at 500 miles for the first two thousand. From then on they are lubricated and oiled

at 1,000 miles. This includes a road-test at every period. Our Foreman and several of the mechanics are skilled "diagnosticians" and as each unit comes up it is taken out, listened to at all speeds, and put over a steep grade near-by. Approximation of actual operating conditions is the only way we have found to prevent breakdown. Of course this test depends upon having very skillful testers.

A Repair-Order form is taken along on the test, which is given *before* greasing and on this the tester notes down work to be done. The form is also used to hold out units needing checking. Drivers fill out no long reports but do turn in a report only when they think the unit needs checking. This is turned in to the office where a clerk writes out an order to check on the Repair-Order, which order then goes to the Foreman, who road tests the unit regardless of its grease and oil time.

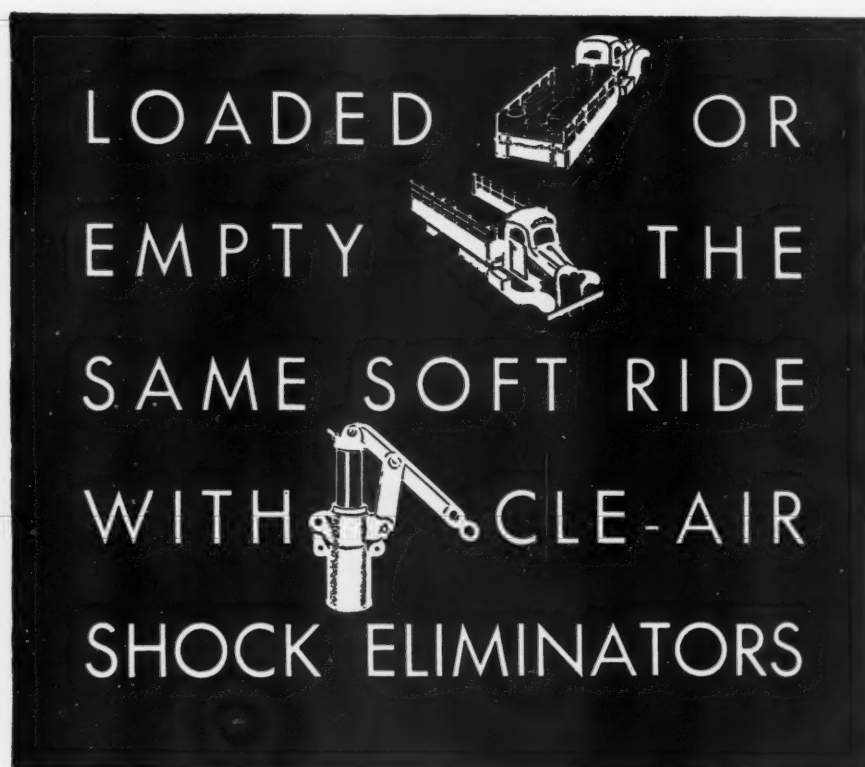
There are two reasons why I do not use a long report form for drivers. First, drivers in motion pictures are not assigned to a unit but work with all kinds of trucks—a point I shall explain shortly. Second, I think a "form" soon becomes just a matter of form to a driver and he soon finds himself simply checking off the listed check-points as O.K. But insisting on a brief report only when the driver thinks it is necessary is a good procedure for us because no driver is able to foresee the time when he might get out on location with that very unit and have something break on him.

Because of our type of operation we need a good dispatching system. This operates as follows: A telephone call comes from some department for transportation. The caller states the nature of articles to be hauled. This information is written on a "Requisition for Transportation" which covers type of unit to be furnished, to what department or set or stage it goes, time wanted at that location, what is to be hauled, and department or production (each production—picture—works under a number) to which unit is to be charged.

The information is then typed on a Trip Ticket, after the call is recorded on the Requisition by a clock that gives date and hour. Each Trip Ticket is numbered, gives driver's name, make and number of truck, tells driver where to report, and gives him his instructions. The time car or truck leaves garage is stamped on by the date-clock and time it returns is also stamped when the Trip Ticket is turned in by the driver.

The reverse side of this Ticket is the driver's trip report. In addition

(TURN TO PAGE 72, PLEASE)



LOADED OR
EMPTY THE
SAME SOFT RIDE
WITH CLE-AIR
SHOCK ELIMINATORS

Adapted from the world-famous Aerol Aircraft Strut, Cle-Air Rear-End Shock Eliminators mark an important development in truck, bus, and commercial trailer operation. They are natural companions of Cleco Gruss Air Springs. For the first time, the progressive resistance principle of compressed air is available for both front and rear spring control. No other device offers the soft, positive resistance *regardless* of whether the truck is loaded or empty.

Moderate in price, mighty in performance, these new but proven units merit your investigation.

THE CLEVELAND PNEUMATIC TOOL CO.

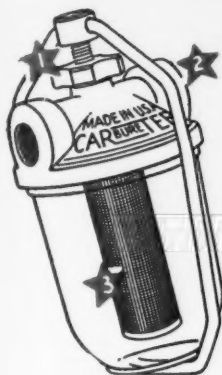
Aircraft-Automotive Division
CLEVELAND, OHIO, U. S. A.

AIR SHOCK ELIMINATORS FOR TRUCKS
BUSSES, AIRPLANES AND RAILROADS

**SCIENTIFICALLY
ENGINEERED**



The CARTER *Airdome* Fuel Filter



★ Top thumbnut clamping feature — makes it easier to clean bowl.

★ Specially designed head prevents warpage or distortion.

★ Brass cartridge screen provides 2½ times the usual filtering area and cannot be assembled incorrectly.

List Price, \$1.50

This development of the world's largest manufacturer of carburetors provides improved filtration of gasoline — an important factor in efficient carburetion. By cushioning the flow of gasoline the Carter Airdome Fuel Filter eliminates pulsations in the line and helps prevent flooding.

When installing a fuel filter install a CARTER — the filter that is scientifically engineered for better performance.

There's a Carter jobber near you.

CARTER CARBURETOR CORPORATION
2834-56 N. SPRING AVE. ST. LOUIS, MO



Division of
American Car and
Foundry Company

(CONTINUED FROM PAGE 70)

to fully covering his actions and hours-record, the reverse side tells mileage off which is subtracted from mileage on in order to give us the mileage charge for the unit. The "mileage off" figure is glanced at daily as the Trip Tickets are filed and when the reading shows within a close distance to the even-thousand that unit is held out of use for greasing, oiling, and road testing.

The Repair-Order records the mechanic's labor time on the reverse side and the Trip Ticket reverses to make a Trip Report. These, with the

exception of the Requisition for Transportation which is merely a convenient system for jotting down the calls as they are rapidly received, give us a complete control over what is perhaps the most mobile trucking operation in the world.

Menace of Moisture in Refrigerated Bodies

(CONTINUED FROM PAGE 35)

and floor are made airtight, moisture will enter when the body is under re-

frigeration. This is because water vapor, being twice as tenuous as air, will pass through microscopic openings so small as to be airtight. In a refrigerated body, water vapor is driven through even these tiny openings by vapor pressure—which has nothing to do with either wind or air pressure. The vapor pressure inside a refrigerated body is almost always lower than the vapor pressure in the outside air. As a result, moisture in the form of vapor rushes in just as air tries to push into a vacuum.

Our laboratory has been experimenting for years on various types of moisture seals to discover which of them are the most efficient and least expensive for everyday use. For refrigerated truck bodies, the following moisture sealing method has been found most desirable.

After the body framing is complete and the insulation in place, at least one layer of duplex waterproof kraft paper (not less than 90-lb. stock) should be applied over the entire outside surface of walls, roof and floor, all edges being carefully sealed with hot asphalt or odorless asphalt paint. Care should be taken that no small cracks or joints are allowed to remain open—for a great amount of vapor can pass through a very small opening. Any such places should be well swabbed with asphalt. After this is done, apply the outer paneling or sheathing as usual, being careful not to break or tear the sealing paper. This is particularly important because one tear in the paper will nullify all the careful sealing of edges. One of the best external seals is sheet metal, when all panel joints are soldered—as, for example, in bodies built with metal-and-plywood exteriors.

Where bodies carrying foodstuffs are regularly or occasionally washed out it is obviously important to prevent leakage of wash water into the wall and floor insulation; otherwise particles of food and dirt accumulating there will naturally cause mildew and other undesirable conditions. All good body builders give careful attention to this phase of the moisture problem.

By following this procedure carefully, a good commercial moisture seal can be obtained. Nevertheless, a certain amount of moisture will penetrate the seal and this brings us to the second phase of the moisture problem—the effect of moisture upon the insulating material itself.

MOISTURE affects the efficiency of different insulating materials in varying degrees. The loss of efficiency is greatest in those materials that absorb moisture readily and least in a material that repels moisture.

Here's why. When water vapor pene-
(TURN TO PAGE 74, PLEASE)

COMMERCIAL CAR JOURNAL
MAY, 1937



CHANGE TO

WARFORDS

AND START MAKING REAL MONEY

Profit in hauling can only come from lowered costs—competition prevents raising prices. Look at the 25-ton load on this Warford Ten-Wheeler and consider that it is being moved with little more than the expense of three tons. Now that's what you call making money!

**MORE
TONS**

**MORE
MILES**

**LESS
COST**

Warfords go anywhere, stop anywhere, for with eight-wheel traction and ten-wheel braking they are equal to any road condition. You can't overwork the engine, for the extra gear ratios of the Warford Auxiliary Super-transmission provide power for any road grade and most cross-country slopes.

See your Ford dealer, or the nearest Warford Distributor today and start making real money.

THE WARFORD CORP.

44 WHITEHALL STREET
NEW YORK, N. Y.

WATCH FOR QUICK STOPS

...and lower brake costs too!

You get both with American Brakeblok. Quick, safe, smooth stops and the lowest brake cost per operating mile any maintenance man ever saw. American Brakeblok is the brake lining preferred by most operators for heavy-duty service. Dependable in any weather. Outwears ordinary brake linings, and needs fewer adjustments. Absolutely no swelling or separating under highest braking heats. Try American Brakeblok on one unit to convince yourself it's safer, and saves you more on brake upkeep.

*American
Brakeblok*

AMERICAN
BRAKEBLOK

AMERICAN BRAKEBLOK CORPORATION • 4600 Merritt Ave., Detroit, Mich.

(CONTINUED FROM PAGE 72)

trates the moisture seal of a truck body it passes through the insulation toward the cold interior. As it nears the inner side of the insulation, it reaches what is called the dew point. Here the water vapor condenses into liquid water just as water vapor in the air condenses on the outside of a glass of ice water in the summer time, although it was not water but vapor when it approached the glass.

If the insulation is absorbent—hygroscopic is the technical term—this condensed moisture remains within the fibrous structure of the material. If the insulation repels moisture—that is, if

it is non-hygroscopic—the condensed moisture is not held within the fibrous structure but trickles to the bottom of the walls and into the floor. This leaves the insulation in roof and walls dry, even though the inside of the floor section may become wet.

THE moisture-absorbing characteristics of the insulation affect its efficiency in another way. During certain times of the year, when weather conditions are ideal, even moisture-absorbing insulation in walls and roof may have an opportunity to dry out. But moisture-absorbing insulations cannot take ad-

vantage of these drying-out periods if there is water in the floor. This is because the insulation in the walls will soak up water from the floor just as does a blotter when one end is placed in a glass of water. This is called capillary attraction and can be demonstrated by placing in a dish of water the lower ends of two clean glass surfaces that are close together. The water will rise to a considerable height between the glass surfaces. This is because molecules of water are more attracted by molecules of glass than they are by other molecules of water, causing the water to climb for a considerable height along the glass. This always happens when glass or other ordinary surfaces or fibres are in close proximity. See "D."

With an insulating material that is non-hygroscopic, or water repellent, this capillary action does not take place; water is not soaked up and the insulation remains dry, retaining all its heat-stopping efficiency. See drawing "E."

In low temperature bodies, such as those used for ice cream, another simple provision is vital. This is the venting of the inside liner. If the liner is not vented, the moisture entering will condense and freeze upon it, building up ice columns which will penetrate back through the insulation toward the outer shell. This is particularly serious in ice cream bodies because the temperature of the inner liner is considerably below freezing and ice spears form rapidly. When the ice crystals melt, as they will when the body is out of service for a short time, the resulting water will be in the insulation where it can do further damage.

If the inside liner is vented, however, and the insulation is non-hygroscopic, the moisture will pass on through and condense upon the cooling mechanism. The vents should be small holes starting about 12 in. above the floor. Vents near the refrigerating element are the most important. Vents are also important in refrigerated bodies that do not carry below-freezing temperatures.

When a good moisture seal, a non-hygroscopic insulating material and a properly vented liner are used in a refrigerated body, the body builder has done everything within his power to make the refrigerated body permanently efficient and inexpensive to operate. Of course, it is still possible that a certain amount of moisture may collect in the floor.

To overcome this handicap a device is now being developed which will permit water collected in the floor to be drained off automatically without permitting moisture from the outside to enter. When this device is ready for application, the body builder should be able to create a refrigerated body entirely free of danger from moisture.

TRUCKTOR

Proves Six-Wheel Trucks Earn Most



Where Detachability is Not Essential Six-Wheel Trucks Show Net Income Advantages Over Tractor-Trailers

America's best known oil companies have long been engaged in comprehensive tests, supervised by experienced engineering staffs, to establish the relative operating and cost efficiency of Six-Wheel Trucks and Tractor-Trailers.

Investigations under such direction are generally accepted as competent and unbiased, and are required to be, because upon the accuracy of the findings very large expenditures are risked.

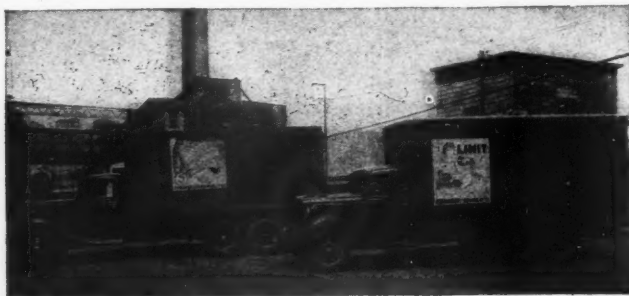
THERE IS SIGNIFICANCE FOR OPERATORS IN OTHER FIELDS OF HAULING IN THE FACT THAT THESE OUTSTANDING SEEKERS AFTER ECONOMY IN DELIVERY COSTS ARE CONSTANTLY INCREASING THE NUMBER OF SIX-WHEEL TRUCKS IN THEIR FLEETS.

For one thing, it does not pay to drag back and forth each trip from $\frac{1}{4}$ to $1\frac{1}{4}$ tons of dead weight embodied in the fifth wheel structure, particularly where only one body unit is ever handled, as is the case on many tractor-trailer operations.

THIS DEAD WEIGHT LOSS turns into PAY LOAD CAPACITY on a SIX-WHEEL TRUCK.

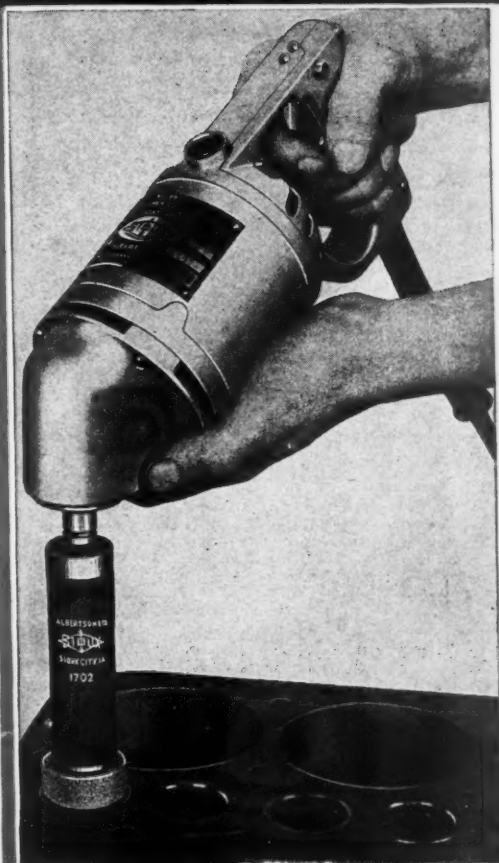
A Trucktor equipped vehicle embodies structural and operating factors which further emphasize the advantages of the six-wheel truck. For example—Automatic Load Distribution (impossible on a Tractor-Trailer) the Detachable 4-Wheel Chain and Sprocket Drive and other elements assuring low first cost, operating economy, and high earning power.

Write for Complete Details.



THE TRUCKTOR CORPORATION • 156 WILSON AVE., NEWARK, N. J.

THE HARDEST VALVE SEATS GROUND TO A PERFECT MIRROR FINISH—QUICKLY!



The precision accuracy so necessary to restore the original efficiency and operating economy of new truck motors . . . accuracy within .001 of an inch without delicate adjustments of any kind. SIOUX Tapered or Tapered Expanding Pilots are used to assure absolutely correct alignment with the center line of the valve stem guide.

—the perfect mirror finish to produce that smooth pur-r-r-ring motor performance;

—speed almost beyond belief . . . the SIOUX High-Speed Driver operates at 12,000 R.P.M. load speed, transmitting its speed directly to the grinding wheel Holder. This speed, combined with the Dual Action and the perfected SIOUX grinding wheels, cuts the hardest metal instantly and accurately. All this is absolutely assured—

with the SIOUX DUAL ACTION VALVE SEAT GRINDER

Priced within the Reach of Every Shop!

This tool is so efficient and accurate that it is used on the production lines of several manufacturers of the higher-priced motor cars. The grinding wheels are reversible on the holder, giving you double service. Angular Driver handy to use in reaching over fender and working under radiator support rods, etc.

No. 1750 Basic Set includes Sioux High Speed Driver, grinding wheel Holder, Dressing Tool with Pilot, and Metal Box.

Your Jobber  **Sells Them**
STANDARD THE WORLD OVER
ALBERTSON & CO. INC. SIOUX CITY, IOWA, U. S. A.

\$125,000 Saved on Maintenance in 5 Years

(CONTINUED FROM PAGE 33)

servicing, drivers are required to check tires themselves daily and to check batteries once a week. They must have their trucks greased and washed once a week and must check oil regularly.

Each operator of a truck is required to make his own minor adjustments on equipment. Emergency repairs which the driver himself cannot take care of are permitted up to \$5. Over that amount authority must be obtained from the traveling mechanic or from

the central shop and the driver is instructed where to take the truck for repairs.

THE monthly inspections made by the traveling mechanic is the time when trucks are given a careful checking. The mechanic's equipment, in addition to his regular shop tools, includes a gas analyzer and electrical equipment. This mechanic is prepared to do a honing job, grind valves, etc. He usually knows beforehand what major work he will have to do by glancing over his monthly inspection reports and he makes his rounds with equipment prepared to do the work. If possible, the work will be

done right on the road. If he has a honing job to do which may take him eight to ten hours, or even longer, he rents space temporarily in a garage. All trucks badly in need of a complete overhaul are sent to the central shop where they are completely torn down and rebuilt, get a new coat of paint, have brakes relined, etc.

As an aid in maintenance, two monthly report forms are used. The monthly operating report form is made out every 30 days by the driver and shows cumulative operation for the entire month.

The monthly inspection report and repair order is filled out by the central shop foreman or the traveling mechanic.

Complete Coverage Small Inventory

for every BRAKE LINING
requirement—LARGE or small

PASSENGER CARS AND COMMERCIAL TRUCKS

Genuine Moulded Custom-Bilt Brake Lining in two or more coefficients of friction for the particular brake system.

**Just What Is Needed For
SAFETY — STOPS — SERVICE**

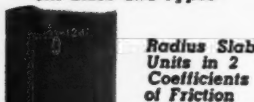
Eliminate guesswork when applying lining to shoes—see Gatke Chart for Material Recommendations.



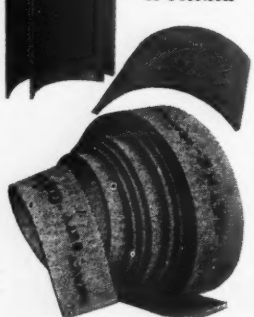
HEAVY DUTY TRUCKS—TRAILERS TRACTORS AND BUSES



Heavy Duty Brake Blocks
All Sizes and Types



Radius Slab
Units in 2
Coefficients
of Friction



Heavy Duty Woven
Brake Lining

Gatke Custom-Bilt Genuine Moulded Brake Blocks. Genuine Moulded Heavy Duty Radius Slab Units. Extra Heavy Duty (Semi-Moulded) Woven Brake Lining.

45 Special "S" Sets of Gatke Brake Blocks reline 185 BLMA Numbers or 4370 various heavy duty vehicles.

21 Genuine Moulded Radius Slab Units plus Popular Car Sets reline approximately 90% of all heavy duty vehicles.

Ask Your **Gatke** Jobber or Write for Material Recommendations and complete information regarding your requirements.

GATKE CORPORATION

228 N. La Salle Street

Chicago, Illinois

EVEN with the centralized shop, traveling mechanic and systematized maintenance, the problem of servicing and repairing our company owned trucks and cars would not be successful without the cooperation of the drivers themselves. Toward this end we have devised a driver's merit system which consists of (1) giving drivers graded demerits for failing to care for their trucks properly, (2) giving drivers merits for proper care of their trucks for which they are commended at the end of the year, or condemned at the end of the year if their records show an accumulation of demerits.

The set-up of this merit system is as follows:

An automotive committee of five members which includes one truck driver, one traveling mechanic or shop foreman, one man from the general office, one man from the accounting department and the motor transport division superintendent is appointed.

The committee holds monthly meetings at which time all inspection reports for the previous 30 days are given individual checking and study is made of any recommendations or requests for reconsideration of merit ratings. Accident reports are also checked by the committee and effort made to determine driver's responsibility for the accident. A continuous record of merits and demerits assessed is kept. These ratings are assigned to the month in which they occur regardless of when the meeting is held. Ratings used are:

CODE A—General lack of periodical lubrication:

Grade C 15 demerits

Grade D 20 demerits

CODE B—Very low condition of grease in transmission:

Grade C 5 demerits

Grade D 10 demerits

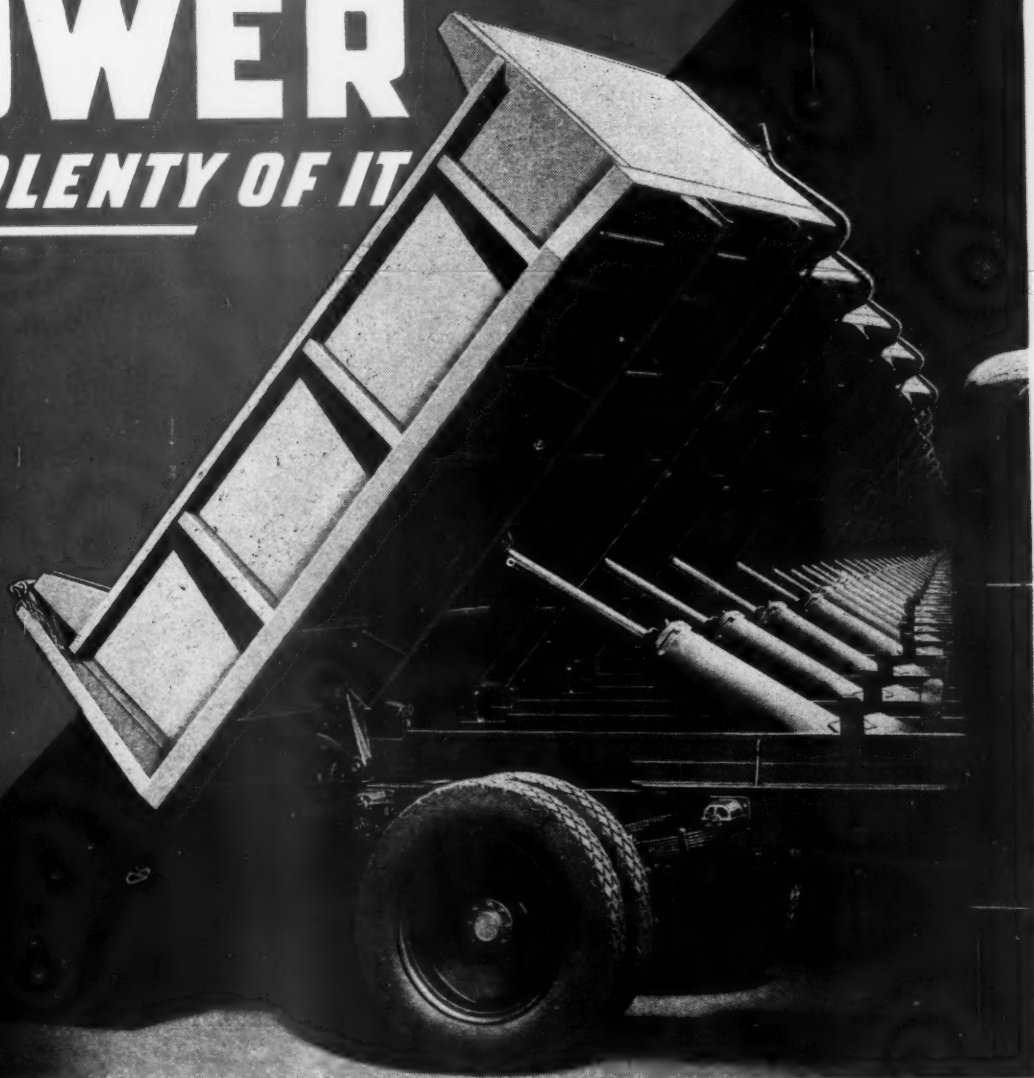
CODE C—Very low condition of grease in differential:

Same as Code B.

(TURN TO PAGE 80, PLEASE)

HYDRAULIC POWER

AND PLENTY OF IT



● Heil Hydraulic dumpers are famous for their dependability . . . Every part of the complete Heil dump unit has reserve strength and power to perform under the terrific strain of heavy loads, unfavorable dumping conditions, and continuous duty . . . You may never have occasion to use the reserve power built into Heil equipment, yet it is there, ready for you, when you need it! . . . Heil makes all types of hydraulic dump units for all kinds of service . . . Ask your nearest Heil representative for recommendations based on your requirements or address your inquiry to: The Heil Co., Milwaukee, Manufacturers of: Hoists . . . Bodies . . . Tanks . . . Oil Burners . . . Water Systems . . . Dehydrators . . . Bottle Washers . . . Scrapers and Snow Plows.

HEIL

HYDRAULIC DUMP UNITS

Manufactured By
THE HEIL CO., MILWAUKEE, WISCONSIN
Factories: MILWAUKEE, WISCONSIN, HILLSIDE, NEW JERSEY
Branches and Distributors Everywhere

(CONTINUED FROM PAGE 78)

CODE D—Low condition of motor oil or allowing oil to remain in crankcase beyond reasonable period.

Grade C 5 demerits

Grade D 10 demerits

CODE E—Dry battery plates or general battery misuse:

Grade C 5 demerits

Grade D 10 demerits

CODE F—Short drag chain on tank trucks: 5 demerits.

CODE G—Tire under-inflation: first 10 per cent allowed for variation in gage. One demerit per tire for each 10 per cent of under-inflation under

recommended pressure. Demerits for tire damaged or ruined for running flat, curb-cut, or general abuse at the discretion of the committee.

CODE H—Tampered governor:

40 demerits and request to management for driver's dismissal.

CODE I—Accidents where driver is at fault: Those involving no damage to equipment, drivers are assessed 5 to 30 demerits. Those involving damage to equipment—20 to 40 demerits. In the case of accidents the committee investigates completely and either dismisses driver from responsibility or charges him with being at fault, and

with the cost of the accident.

CODE J—Excessive repairs through neglect of equipment: demerits at the discretion of the committee.

CODE K—Violations of all other company rules: Demerits are given at the committee's discretion.

Drivers who accumulate 40 demerits have their entire records reviewed by the division manager for his consideration with recommendations from the committee. Demerits assessed for the same reason in two consecutive inspections are doubled on the second month's demerits assessed.

Merits are awarded on the following basis:

CODE P—For each three consecutive inspections on which no demerits are assessed the driver is awarded 10 merits.

CODE Q—Drivers completing each six-month period without an accident receive 10 merits.

CODE R—Drivers by class of equipment having the lowest operating cost as of June 30 and December 30 of each year receive 10 merits for each half.

CODE S—Special recommendation merits to be assigned at the discretion of the committee to drivers who have made consistently good showings.

CODE T—Merits are awarded at the discretion of the committee to drivers who have unusually long tire service.

CODE V—Merits for suggestions from drivers to improve operation and service.

After each monthly committee meeting a letter is forwarded to each driver giving him his operating costs for the previous month as well as any information concerning merits or demerits assigned against him.

If there is any question regarding the value of this system of shop centralization with a traveling mechanic for servicing a scattered fleet and of keeping drivers in line with the merit and demerit plan, the following facts should abolish such doubt.

Total fleet operating costs in this division including depreciation, maintenance, department overhead, etc., amounted to 10.4 cents per mile in 1929. In 1930 the total cost per mile for trucks was 9.2 cents and for passenger cars it was 4.95 cents per mile. On car allowance cars it was 4.8 cents per mile. In 1931 after the new maintenance procedure was put into effect and we had adopted the merit and demerit system, the total cost per mile for trucks dropped to 7.18 cents per mile and for passenger cars it dropped to 3.78 and on car allowance cars to 3.39 cents per mile. In that year 76 trucks did 802,613 miles; 16 cars covered 368,428 miles and 95 personally owned cars

(TURN TO PAGE 82, PLEASE)

"Wherever Traction Counts—You Can Count On Thornton Drive"



CLASSES OF SERVICE DESIRED	
DOMESTIC	CABLE
TELEGRAM	FULL RATE
DAY LETTER	DEFERRED
NIGHT MESSAGE	NIGHT LETTER
NIGHT LETTER	SHIP RADIOGRAM

Patrons should check class of service desired; otherwise message will be transmitted as a full-rate communication.

WESTERN UNION

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PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEYER
FIRST VICE-PRESIDENT

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WIRE REPLY
OUR EXPENSE

PLEASE WIRE US COLLECT IF YOU ARE ABOUT TO PURCHASE A TRUCK TO HAUL EIGHT TO TEN TONS PAYLOAD STOP WE WILL IMMEDIATELY PLACE THE SAME INFORMATION IN YOUR HANDS THAT HAS CAUSED MANY OF THE SMARTEST FLEET OPERATORS IN THE WORLD TO BUY STANDARD FORD OR CHEVROLET TON AND A HALF TRUCKS WITH THORNTON FOUR REAR WHEEL DRIVES ENGINEERED INTO THEM STOP THIS DRIVE NOT TO BE CONFUSED WITH EARLY EXPERIMENTAL TYPES AND OFFERS SO MANY ADVANTAGES IT IS IMPOSSIBLE TO DETAIL THEM HERE STOP YOUR SAVING ON FIRST COST IS CONSIDERABLE BUT SURPASSING PERFORMANCE, GREATER ECONOMY AND STABILITY STILL MORE OUTSTANDING STOP WIRE OR WRITE TODAY WHILE PROMPT DELIVERY STILL POSSIBLE.

THORNTON TANDEM CO.
5135 BRADEN STREET
DETROIT MICH.



Maximum Tank Capacities 2300 to 2500 Gallons

FROM CHINA TO ALASKA - FROM AUSTRALIA TO PERU

"CONTINENTAL"

STANDS FOR QUALITY



**CHROME-NICKEL-ALLOY
CYLINDER BLOCKS AND HEADS
NICKEL-MOLYBDENUM-STEEL TRANSMISSION AND
DIFFERENTIAL GEARS
*for Trucks and Buses***

"Continental" Blocks, Heads, and Gears for trucks and buses are the world's finest. Their superior performance is assured by leading metallurgists and foremost engineers. So, play safe. Use genuine "Continental" parts, of quality equal—often superior—to original equipment; and save 25 to 30%.

CONTINENTAL GEAR & ENGINE CORPORATION..

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Write Today
for your copy of our
new, 1937 Catalog.
It contains 150 pages,
profusely illustrated.

(CONTINUED FROM PAGE 80)

covered 1,358,060 miles for a total of 2,539,101 miles. This represented a saving of .0202 cents per mile on trucks for a total saving of \$16,212.78; it was a saving of .0156 cents per mile on company cars for a total saving of \$5,747.47; and it was a saving of .0019 cents per mile on personally owned cars for total saving of \$2,580.31. The grand total saved through the decrease in operating costs in 1931 was \$24,540.56!

The total cost of all company equipment dropped to 5.5 cents per mile in

1932 and took another downward spin in 1933 to 4.38 cents per mile. In 1934 it dropped to 4.08 cents per mile.

For 1935 the cost of operation of all company equipment reached a low of 4.07 cents per mile for 1,056,000 miles. All salesmen cars which are privately owned but maintained by us on an allowance basis covered 1,750,000 miles in 1935 at an operating cost of just under 3 cents per mile. On shop overhead and repairs alone we cut costs from 1.76 cents per mile in 1930 to .0079 cents per mile in 1935.

We have also traced directly the sources of these savings. We are

getting better gas mileage by 20 per cent, at least, through making adjustments and check-ups periodically with a gas analyzer, through governed speeds and through our own improved fuel. Tire costs have been cut from .0037 cents per mile to .0029 cents through proper inspection and care. Brake relining and valve grinding reduced more than 50 per cent and not a single bearing failure in four years.

We have also achieved considerable savings on paint costs. Prior to 1931 we farmed out most of the paint work at an average cost of \$30.00 to \$35.00 per truck or tank. We now do a tank or truck job for approximately \$12.50. A total of 150 to 200 tanks and 75 to 125 trucks, including distributor and privately owned tank trucks, are now painted in our own shop yearly.

THESE facts, I believe, should leave little doubt of the value of our centralized shop and traveling mechanic for servicing a scattered fleet and of the value of the merit and demerit system for getting the drivers to cooperate to the best of their ability.

Fleet Patrol System

(CONTINUED FROM PAGE 27)

a trained adjuster knows will be necessary.

Probably present (and perhaps with the ground work done when the adjuster gets there) is the Consolidated patrolman on the beat, if the accident occurs at night when the over-the-road trucks are in operation. There are three such patrolmen who cover roughly the same territory as the insurance men. They travel in company-owned light trucks equipped with jacks, flares, lanterns, emergency kits, drop lights, acetylene flood lights, axes, tools, spare tires and fire extinguishers. These patrolmen go on duty when the trucks start rolling at night and call the dispatchers at that time. They tell the dispatcher what route they will cover that night, there being several routes that each one can take, and then it is too late for the company grapevine to warn drivers.

THESE patrolmen are engaged largely in preventing accidents; they do not sit around and twiddle their thumbs until an accident happens. They cover the Consolidated routes all night long checking to see that drivers obey the company rules. The dispatcher knows where to locate them at way stops such as popular driver lunch rooms and the patrolmen call the dispatcher at intervals to report. The dispatcher can actually communicate with any patrolman

(TURN TO PAGE 86, PLEASE)

COMMERCIAL CAR JOURNAL
MAY, 1937



ARROW APPROVAL AND ACCEPTANCE DUE TO SUPERIORITY

Compare Arrow safety devices with others. You'll find they're not gadgets. They're built for a purpose—they're built for service. That's why fleet owners everywhere specify ARROW SAFETY.

Arrow Signals Legally Approved

Install Arrow Directional Signals, not just to be within the law, but to add safety to "payloads." The Arrow Line includes all popular approved combinations. Arrow is the choice of fleet operators and truck manufacturers everywhere.

ARROW DRIVING LIGHTS

They are scientifically designed to capture all "fringe" rays and concentrate them into a single, powerful, penetrating, fan-shape beam. Improve visibility at night with Arrow Driving Lamps.

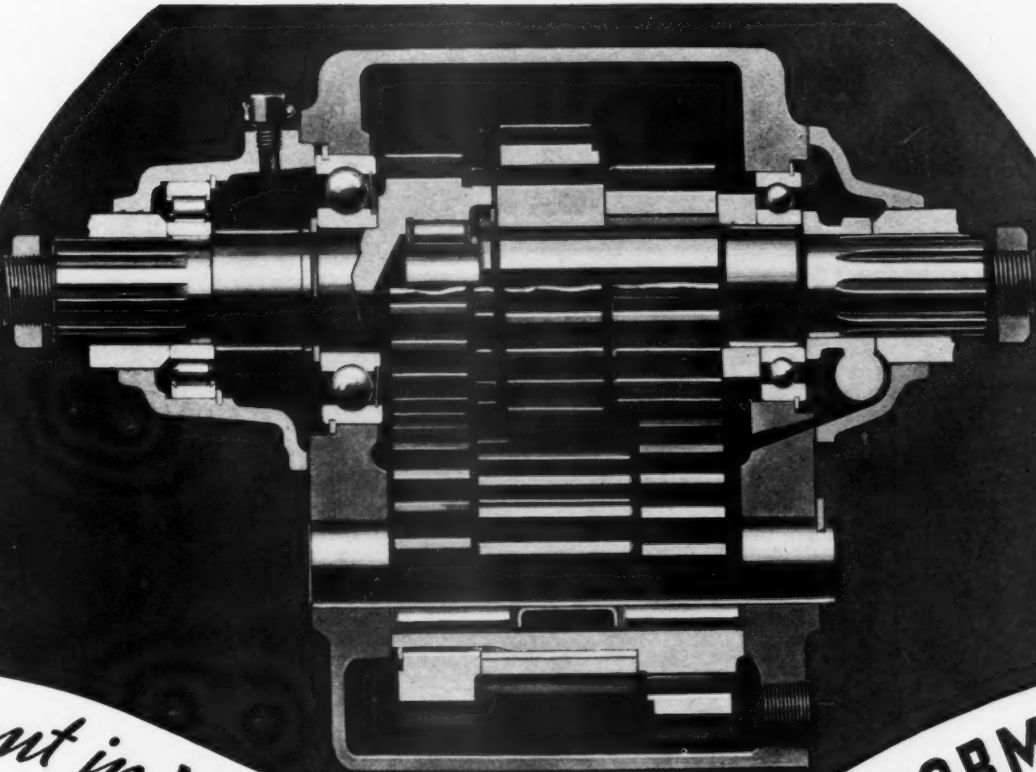


Ask your
Jobber

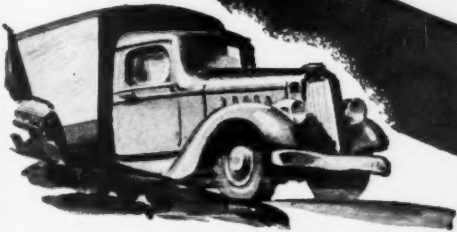
**ARROW SAFETY
DEVICE COMPANY, INC.**

MEDFORD, NEW JERSEY

EQUIP YOUR TRUCK FOR PROFIT



...put in MORE GEARS for REAL PERFORMANCE



A good engine is badly handicapped without the right gear ratios to properly transmit its power. There is no point in equipping your truck with a trailer, third axle and overload springs if you don't add extra gear ratios too! For real performance you need more gears and plenty of gear ratios. A Watson-Brown-Lipe will give your truck 12 forward speeds. It will pay for itself quickly—then it will pay you! From the minute it's installed you'll know you have the most efficient helper unit you can put in a truck.



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H.S. WATSON CO., SAN FRANCISCO & TOLEDO

COMMERCIAL CAR JOURNAL
May, 1937

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Bozeman, Mont., Hines Motor Supply Co.
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Sheridan, Wyo., Hines Motor Supply Co.
St. Louis, Mo., McCabe-Powers Auto Body Co.
Spokane, Wash., Roy E. Hotchkiss Co.
Salt Lake City, Utah, Koepsel & Love
Syracuse, N. Y., Truck Equipment Co., Inc.
Toledo, Ohio, Turner Brake Service
Tulsa, Okla., Braden Winch Service Co.
Washington, D. C., S. J. Meeks' Son

20%
LESS FUEL

23%
FEWER R.P.M.'S

52%
MORE POWER



Hein-Werner Hydraulic Jacks are exceptional values . . . and today every model in this complete line represents more for the money than at any other time in the phenomenal growth of this company.

This popular line of jacks, all of which are built right and priced right, include the "Bullet" Model, 1½ ton capacity at \$3.30 (West Coast \$3.80) . . . Light Truck Special, 2 ton model, \$4.40 (West Coast \$4.95) . . . For light trucks, 3 ton models at \$8.40 (West Coast \$9.00) . . . 5 ton model, \$10.50 (West Coast \$11.25) . . . 7 ton models at \$13.90 (West Coast \$15.00) . . . For heavy trucks, buses and shop use—12 ton models \$20.50 (West Coast \$21.75) . . . 20 ton models, \$34.50 (West Coast \$36.00)—and for modern passenger cars, our new BUMPER-LIFT Model at a new low price of \$5.45 (West Coast \$6.00) . . . Above prices net to dealer.

Hein-Werner also makes a complete line of Service Jacks . . . Ask for details.

HEIN-WERNER MOTOR PARTS CORP.
WAUKESHA, WISCONSIN

*More for
the money*

FEW MODELS ENGINEERED TO DO THE WORK OF MANY

HEIN-WERNER
hydraulic JACKS

(CONTINUED FROM PAGE 82)

in any given 20 minutes. Evidence that this system works is provided by the fact that only over-the-road trucks with odd-sized tires carry spares. The others in case of a flat call the dispatcher, who gets the patrolman started to the stalled truck. Certainly this plan would not work if the patrolman could not get there with a spare promptly.

None of the patrolmen are ex-truck drivers, the reason being chiefly that the company feels that it would be hard for an ex-truck driver to check up and report on his old buddies. The patrolmen are uniformed and the trucks they drive are plainly labeled so there is no doubt in the minds of company drivers or any other interested parties as to who the patrolman might be. The patrolmen are skilled in changing tires and in minor service jobs which might stall a truck.

One of their jobs is to keep trucks moving. The company believes that a stalled truck is a first-class accident hazard. If the mechanical condition is such that a mechanic is needed, the patrolman calls up for one if the driver has not already done so. Spare tractors are kept at terminals along the route so that only a trailer failure can keep the bulky part of the vehicle tied up.

Typical of a patrolman's report is "Found Benny — asleep in the cab behind the diner at —. It was below freezing and the motor was running." (Benny will have to do some accounting because Consolidated drivers are not overworked and they are not permitted to tie up equipment while they sleep along the road.) Another report indicates that a tail gate chain ring broke and several cases of goods fell off. A driver behind picked up what

was recovered and a patrolman scoured that part of the highway to be sure that no goods were being left along the road.

When the patrolman supplies evidence that a driver has broken a company rule he is finished with the case.

The case is handled by Carl Kask, who handles all labor situations for the company. He was taken from among the drivers where he was the union president. He has the confidence of the drivers and he talks their language. The drivers know that their relations with the company will be handled by a man who is basically fair and who understands and appreciates their problems. Present at all of the hearings is an employee representative of their own choosing and he must agree that any form of discipline taken is justified. Thus it is impossible for rumors that Consolidated is unfair to drivers to get around the

*More for
the money*



Look 'em all over and you will agree that Hein-Werner offers more for the money than you ever expected to get in a hydraulic floor jack.

All five models in this outstanding line have structural steel side members . . . Low at 4"—and saddle high point at 24½" . . . 90° stroke on all handles . . . Saddles are 6½" in diameter.

All models have steel hydraulic units except Model 0324G . . . All have safety valves and by-passes—and automatic oil level . . . And all have release valves that can be locked and key removed.

Model 0237J—FLOOR and CURB JACK, without swivel wheels . . . 2 ton capacity \$34.00 (West Coast \$37.00).

Model 0237K—FLOOR and CURB JACK, with swivel wheels, (shown above at right) . . . 2 ton capacity \$36.50 (West Coast \$40.00).

Model 0237L—FLOOR JACK (shown above at left) . . . 2 ton capacity \$44.50 (West Coast \$47.50).

Model 0337H—FLOOR JACK . . . 3 ton capacity \$52.50 (West Coast \$57.20).

Model 0324G—FLOOR JACK . . . 4 ton capacity \$59.50 (West Coast \$65.50).

All prices are net to dealer . . . Ask for details on these floor jacks—also on complete line of passenger car and truck hand jacks.

HEIN-WERNER MOTOR PARTS CORP.
WAUKESHA, WISCONSIN

FEW MODELS ENGINEERED TO DO THE WORK OF MANY

HEIN-WERNER
hydraulic JACKS

union because one of their officers has approved the treatment before it becomes effective. Mr. Kask makes it a point to go to the driver who works uninterruptedly until the hearing.

About the worst that can happen to a Consolidated driver, if he stays on the payroll, is two weeks off for which he does not get paid. Drivers are never made to pay for any damage caused by their negligence. The company believes that since they work for wages and do not share in the profits, they should not share in the expenses.

The drivers are paid a predetermined amount for moving trucks between the different terminals. There is a different rate for six-cylinder trucks and four-cylinder trucks. This amount is based on an hourly rate with a slight balance in favor of the truck driver. If the truck breaks down or the truck has to load at

a terminal en route, this time is punched in and out on the route card and the driver is paid an hourly rate for his motionless time. These route cards are watched closely so that a driver cannot work too many consecutive hours with too little rest. Eight hours is the minimum rest period between runs.

The effectiveness of any safety program can be gaged by the reduction of accident frequency and the figures in this case are particularly good. In three years of self-insurance the total number of accidents has been reduced about 35 per cent while the number of trucks operating has doubled. If we may be permitted a few arithmetical gymnastics, this looks like a reduction of about 76 per cent in accident frequency.

If you think that the insurance profit was earned by driving hard bargains with the party of the second part and

not by accident reduction and expeditious handling you have to do a mental hurdle over the fact that in three years of self-insurance that Consolidated has been taken to court only once by a complaining party. This ought to be some kind of a record. While the company may not toss its money around lavishly it certainly cannot be niggardly and have a box score like that one.

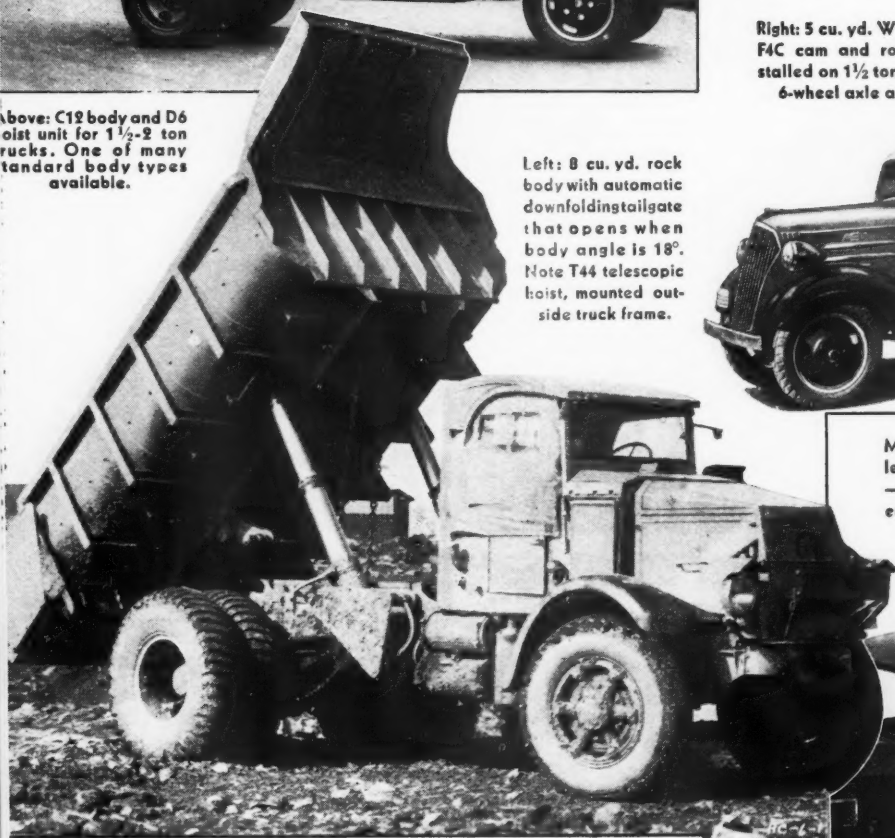
This year there happened one of the things that all truck operators dread. A Consolidated truck was involved in an accident in which two women were killed. The insurance department had one claim settled in 10 days and the other within three months. That gives you just a fair idea of the service that Consolidated gets from its insurance department—a service that it was unable to buy outside at any price, much less at a bargain figure.

GAR WOOD HOISTS AND DUMP BODIES

Built to **STAY ON the JOB!**



Above: C12 body and D6 hoist unit for 1½-2 ton trucks. One of many standard body types available.



Left: 8 cu. yd. rock body with automatic downfolding tailgate that opens when body angle is 18°. Note T44 telescopic hoist, mounted outside truck frame.

For equipment that can start the job — and finish it — your choice should be Gar Wood. Contractors and road builders the world over prefer Gar Wood hoists and bodies — not only because they stand up, but because they are available in any type and size the job calls for.

These illustrations show but a few typical units. For information on the complete line, write for the various bulletins which are available.

Branches and distributors in all principal cities.

Right: 5 cu. yd. W12 body and F4C cam and roller hoist installed on 1½ ton chassis with 6-wheel axle attachment.



Model F4C cam and roller hoist and W12 body — the standard dump equipment of thousands of truck operators.



Above: Combination dump and platform body, type CJ1-D, installed with D6 hoist.



Above: This shows the CJ1-D body converted to a platform, when sides and tailgate are downfolded. Stake pockets are provided. Note the Gar Wood winch, which really makes this an all-purpose unit for any contractor.



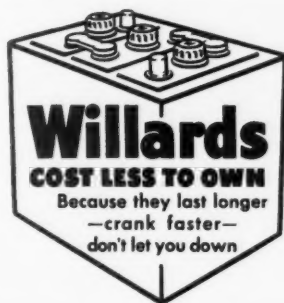
2-way side dump unit, with T2 telescopic hoist, for maintenance work.

GAR WOOD INDUSTRIES INC.
HOIST AND BODY DIVISION — DETROIT, MICHIGAN



—the trucks that are
"BUILT TO MEET
A CONDITION"

THE **HUG** COMPANY
Highland • Illinois



DETROIT COMPENSATING AXLE

The first practical mechanical device to provide an automatic camber for semi and trailer axles, thus insuring longer tire life and marked fuel savings.

For detailed information write or wire.

Detroit **COMPENSATING** Axle Corp.

Compensating Axles and
Differential Wheels

481 Beaufait Street Detroit, Michigan

Pin Hole Honing is Cheaper and Better than Reaming

● Never a dull tool or blade-marked hole; small investment; nothing to sharpen; no guess-work or inaccurate fits. Low cost replacement Abrasives; Micrometer Adjustment. Makes ANY mechanic an expert pin fitter. Ask your Jobber today for Standard or Heavy Duty Pin Hone Set you need.

3-TOOL
SET
\$24.00

HALL
PISTON PIN HONE

21 MOTOR CAR
MANUFACTURERS

use Weatherhead fuel lines as
original equipment. Can we give
you any better proof of quality?

THE WEATHERHEAD CO.
CLEVELAND, OHIO

D Line of International

(CONTINUED FROM PAGE 39)

The present D line of trucks replaces the C line, which has been marketed by International Harvester Company for a number of years back, and nearly all of the D-line models correspond to a C-line model of the same tonnage rating. Two models which had no equivalent in the C line are the D-5, a light truck intended for multiple-stop service, which has chassis dimensions similar to the D-2 but carries a much smaller, four-cylinder engine (3¼ by 4-in., 133 cu. in., 33 hp. at 2800 r.p.m.). The other is the 1½-ton seat-over-engine type, known as the Model D-300, and with dual-ratio rear axle as the DS-300.

MOST of the new models carry engines of greater displacement and higher output rating than the models they replace. Thus the 1½-ton Model D-30 has a six-cylinder engine of 3 5/16-in. bore by 4½-in. stroke instead of 3 5/16-in. bore and 4¼-in. stroke, so the displacement was increased from 213 to 232 cu. in. and the rating changed

(TURN TO NEXT PAGE, PLEASE)

IHC FOUR-WHEEL MODELS

MODEL	Wheelbase C-A	Dimensions	Gross Vehicle Weight (Lb.)	No. Cylinders Bore and Stroke	Displacement	Max. H.P.	Max. Torque
D-2	113 125	39 51	4,400	6-2 1/8 x 4 1/2	213	78	155
D-5	113 125	39 51	4,400	4-3 1/4 x 4	133	33	89.5
D-15	130 128	56 57	6,500	6-3 1/8 x 4 1/2	213	78	155
D-30	155 173	84 102	12,000	6-3 1/8 x 4 1/2	232	81	170
DS-30(S) ..	128 155 173	57 84 102	12,100	6-3 1/8 x 4 1/2	232	81	170
M-3 (Milk) ..	118	...	7,100	4-3 1/4 x 4 1/2	186	41.5	125
D-35	137 149 161 179	60 72 84 102	13,000	6-3 1/8 x 4 1/2	241	84	175
DS-35(S) ..	137 149 161 179	60 72 84 102	13,100	6-3 1/8 x 4 1/2	241	84	175
D-40	134 146 158 176	60 72 84 102	14,500	6-3 1/8 x 4 1/2	258	89	192
D-50	137 149 161 179	60 72 84 102	17,000	6-3 1/8 x 4 1/2	298	93.5	218
D-60	149 161 179 197	72 84 102 120	20,000	6-4 1/8 x 4 1/2	361	111.5	268
DR-60(R) ..	149 161 179 197	72 84 102 120	20,000	6-4 1/8 x 4 1/2	361	111.5	268
DR-70(R) ..	149 161 179 197	72 84 102 120	24,000	6-4 1/8 x 5	401	114	308

For running-in new and rebuilt engines use auxiliary lubricants containing "dag"* Brand colloidal graphite.

Acheson Colloids Corporation

Port Huron



Michigan

*REG. U. S. PAT. OFF.

★ HEAVY DUTY PLUGS

and

RECEPTACLES



for

tractor-trailer connections

Truck type connectors for electrical circuits between tractors and trailers not only insure dependable service but are a proved economy. Road delays are reduced, fire hazard and battery troubles prevented, and constant troublesome maintenance eliminated.

Pyle-National plugs and receptacles are offered in 2, 3, 4 and 6 pole types, rated 20 amperes, for lighting, signal, electric brake, and other circuits. Substantial weatherproof construction, positive locking connection, and self-aligning contacts insure keeping positive contact under vibration, road shocks, and other severe operating conditions.

Send for special bulletin 189-A describing the complete line, with data on installation.

★
THE PYLE-NATIONAL COMPANY

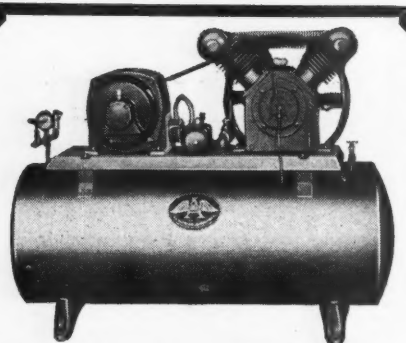
1334 North Kostner Avenue, Chicago, Illinois.

Send me Bulletin No. 189-A on tractor-trailer plugs and receptacles.

Name

Company

Address



DAYTONS DO THEIR DUTY—

That's Why Daytons Sell!

You buy a truck not only on its rated horse power, load capacity and economy—you buy it for the good name back of it. Buy Air Compressors that way, too! DAYTON gives you peak capacities, minimum operating expense, years of endurance, rugged reliability—plus Dayton's 50-year record of "Air Compressors Exclusively." . . . A complete line for garage and station—1 to 60 ft. capacities—Single Stage, Two-Stage, V-Type—horizontal or vertical. Every worth-while improvement plus patented DAYTON features.

*Write for bulletin,
stating your needs.*

The Dayton Air Compressor Co., Dayton, Ohio

GENERAL OIL FILTERS

- INCREASES ENGINE LIFE
- DECREASES MAINTENANCE COST

The General Filter meets the demand of the most critical fleet operator—in performance—in design—in initial cost—in service cost.

The finest particles of solids are filtered and trapped in a can type cartridge keeping the crankcase oil in a clean and clear condition at all times.

The initial cost and upkeep are so low that many fleet operators who have found the cost of using filters prohibitive in the past, can now equip their engines with the General Filter and show a remarkable saving.

Write us for details

GENERAL FILTERS, Inc.

9001 Alpine Ave. Detroit, Mich.

(CONTINUED FROM PAGE 95)

IHC FOUR-WHEEL MODELS—Cont.

MODEL	Wheelbase	C-A Dimensions	Gross Vehicle Weight (Lb.)	No. Cylinders Bore and Stroke	Displacement	Max. H.P.	Max. Torque
A-7(R)....	160 180 200 225	72 92 112 137	37,000	6-4½x5½	525	123	358
A-8(R)....	160 180 200 225	72 92 112 137	37,000	6-5x5½	648	140	460

CAB-OVER-ENGINE MODELS

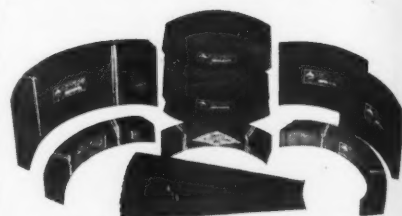
D-300.... (c.o.e.)	99 117	84 102	12,000	6-3½x4½	232	81	170
DS-300.... (c.o.e.)(S)	99 117	84 102	12,100	6-3½x4½	232	81	170

SIX-WHEEL MODELS

D-186-T....	173 191	102 120	18,000	6-3½x4½	232	81	170
DS-186-T....	173 191	102 120	18,000	6-3½x4½	232	81	170
D-216-T....	176 194	102 120	21,000	6-3½x4½	241	84	175
D-246-T....	161 179 197 215	84 102 120 138	24,000	6-3½x4½	298	93.5	218
D-246-F....	161 179 197 215	84 102 120 138	24,000	6-3½x4½	298	93.5	218
D-346-T....	161 197 215	84 120 138	34,000	6-4½x5	401	114	308
D-346-F....	161 197 215	84 120 138	34,000	6-4½x5	401	114	308
DR-426-F....	161 215	84 138	42,000	6-4½x5	450	11.5	335
AR-626-F....	180 253	92 165	62,000	6-5x5½	648	140	460

T—Trailing Axle. F—Dual Drive
R—Double-Reduction Axle. S—Two-Speed Axle.
C-A—Back of Cab to Center of Rear Axle.

from 79 hp. at 3400 r.p.m. to 81 hp. at 3200 r.p.m. Rated engine speeds were lowered slightly throughout the line. The D-35 and DS-35 have engines of 241.5 instead of 223 cu. in. displacement and the rated speed of that model also was reduced from 3400 to 3200 r.p.m. The D-40 now carries a six-cylinder 3½ by 4½-in. engine, while the C-40 had a 3 7/16 by 4-in. engine. The greatest increase in engine size occurred in the 4-5-ton model, which for-



BLOCKS
SHOES
ROLL LINING
SEGMENTS



FOR TRUCKS
BUSES
TRAILERS
AND CARS

ASBESTOS MANUFACTURING COMPANY
HUNTINGTON, INDIANA

"Supervised Transportation"



1st

and the last word in governors

*Write for complete information — there
is a MONARCH distributor in your area.*

MONARCH GOVERNOR CO., DETROIT

THE DEARBORN LINE

CAB OVER ENGINE
FOR FORD TRUCKS

ADDS A CAB-FUL OF PAYLOAD

The same wheelbase yields one-third to one-half more load capacity with no increase in operating cost. An easily-opened hood insures ready service accessibility.

See your nearest Ford dealer or write us.

TRANSPORTATION ENGINEERS, INC.
10441 Shoemaker Ave., Detroit, Mich.

Eliminate Vibration With the

OHIO FLEXON Clutch Plate



Will correct such clutch troubles as clashing gears, jerky starting, vibration and clutch chattering. Flexible center and cushioned surfaces insure smooth clutch performance.

AUTOMOTIVE PARTS DIVISION
Wagner Electric Corporation
St. Louis, U. S. A.

Unconditionally
Guaranteed

MUFFLERS
TAIL PIPES
AXLES · GEARS
CYLINDER HEADS

UNIVERSAL

ADJUSTABLE-FIT

MUFFLERS

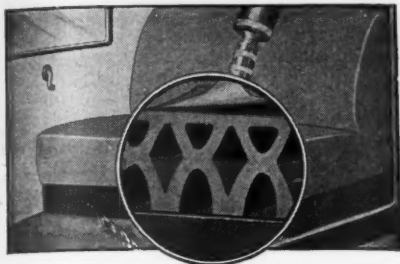


ATTENTION! Truck Distributors

Superior Trailers will make profits for you. We have the protected distributor plan. No factory competition. We offer a national finance plan through C. I. T. A few noncontacted territories are available. Write to

Black-Diamond — The Perfect All-Rubber

SEAT CUSHION



The best way to find out how Black-Diamond All-Rubber seat cushions and back rests can be used with best results in your trucks is to see how they were used by others . . . and learn why they were selected. Write us for this information and in addition we will explain why these cushions last longer, are more comfortable, and have no upkeep expense. Low in cost to install.

KARPEX MANUFACTURING COMPANY
1424 E. 19th St. Indianapolis, Ind.

FULLER
TRUCK TRANSMISSIONS
For easy shifting, quiet operation, hauling power and dependability, be sure to choose trucks equipped with FULLER'S.
FULLER MFG. CO.
KALAMAZOO, MICH.

OSHKOSH

4 Wheel Drive Trucks

A proven product. 1½ to 10 ton capacity. Write for complete information.

OSHKOSH

Motor Trucks, Inc.
Oshkosh, Wis.

DOUBLE
SAFETY

POSITIVE
TRACTION

DOUBLE
MILEAGE

McKay Multi-Grip
Double-Bar-Reinforced
Truck Chains

merly carried an engine of 298 cu. in. displacement but now has one of 401 cu. in.

SOME of the engines have three-point support on the frame and a new front end mounting is used on models D-50, D-60, and DR-70. Flexibility is provided by supporting the engine in a trunion by holding the cap of the trunion down with coil springs and by providing the trunion with a rubber bushing or liner.

The de luxe panel bodies are steel bodies built of large stampings so as to reduce the number and length of welded seams. These bodies are quite light and very rigid. Body frames are formed with cross sills, side pillars and inner panels, longitudinal channel ribs, roof channel rail and roof bows all flanged braced and welded into a rigid unit which is essentially tubular in shape. A pressed-in belt molding constitutes the only trim. The trucks are offered in a choice of colors.

Utility Fleetmen Discuss Problems

(CONTINUED FROM PAGE 21)

"9. The 'sump' should be of ample size to collect the heavier solid impurities and water.

"10. It should present no oil loss hazard.

"11. It should be easily adapted to all makes of engines.

"12. It should be sturdy enough to withstand rough service."

In approaching the general conclusions which led off this report on the oil filter session, Professor Clower admitted that varied opinions are held as to the benefits likely to accrue from the use of oil filters.

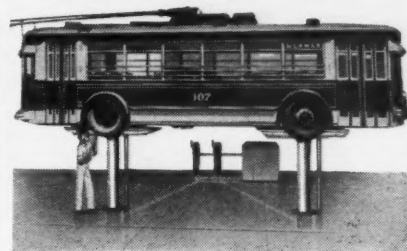
"No two people appear to agree on this question," he confessed. "I suppose this is because it is very difficult if not impossible to obtain comparative data."

The discussion that followed from the floor supported his admission.

F. K. Glynn, of the American Telephone & Telegraph Co., said: "I believe in filters but I have never been able to find out where my profits come in. Oil filters would have even greater acceptance if their makers could give the proof of profits. So far I don't think they have."

O. A. Axelson, of Columbia Gas & Electric Co., said: "We accept oil filters on faith and we do find them economical. Our oil consumption has been decreased 50 per cent. We have no set period for oil changes. Some of our

Modernize Your Service Facilities

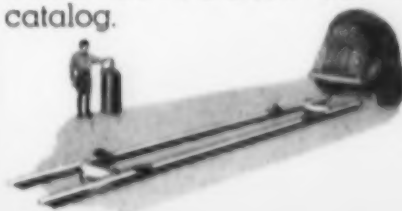


Modern Buses and Trucks are designed with the axles further from the ends, resulting in a greater overhang and making it almost impossible to use portable floor type jacks. Parts are being closer coupled. For these reasons and many others more and more fleet owners are turning to Rotary Bus and Truck Lifts.

Rotary pioneered the Hydraulic auto lift and leads the world today in equipment of this type. Twelve standard models with capacities from 10,000 lbs. to 50,000 lbs. are offered in Bus and Truck Models and special equipment can be tailored to suit unusual requirements.

Safety, dependability, accessibility to under car parts are inherent in Rotary's design and construction. Write for literature or see your own jobber.

Write us TODAY for a catalog.



Jobbers in all principal cities.

ROTARY LIFT CO.

(CONTINUED FROM PAGE 80)

covered 1,358,060 miles for a total of 2,539,101 miles. This represented a saving of .0202 cents per mile on trucks for a total saving of \$16,212.78; it was a saving of .0156 cents per mile on company cars for a total saving of \$5,747.47; and it was a saving of .0019 cents per mile on personally owned cars for total saving of \$2,580.31. The grand total saved through the decrease in operating costs in 1931 was \$24,540.56!

The total cost of all company equipment dropped to 5.5 cents per mile in

1932 and took another downward spin in 1933 to 4.38 cents per mile. In 1934 it dropped to 4.08 cents per mile.

For 1935 the cost of operation of all company equipment reached a low of 4.07 cents per mile for 1,056,000 miles. All salesmen cars which are privately owned but maintained by us on an allowance basis covered 1,750,000 miles in 1935 at an operating cost of just under 3 cents per mile. On shop overhead and repairs alone we cut costs from 1.76 cents per mile in 1930 to .0079 cents per mile in 1935.

We have also traced directly the sources of these savings. We are

getting better gas mileage by 20 per cent, at least, through making adjustments and check-ups periodically with a gas analyzer, through governed speeds and through our own improved fuel. Tire costs have been cut from .0037 cents per mile to .0029 cents through proper inspection and care. Brake relining and valve grinding reduced more than 50 per cent and not a single bearing failure in four years.

We have also achieved considerable savings on paint costs. Prior to 1931 we farmed out most of the paint work at an average cost of \$30.00 to \$35.00 per truck or tank. We now do a tank or truck job for approximately \$12.50. A total of 150 to 200 tanks and 75 to 125 trucks, including distributor and privately owned tank trucks, are now painted in our own shop yearly.

THESE facts, I believe, should leave little doubt of the value of our centralized shop and traveling mechanic for servicing a scattered fleet and of the value of the merit and demerit system for getting the drivers to cooperate to the best of their ability.

Fleet Patrol System

(CONTINUED FROM PAGE 27)

a trained adjuster knows will be necessary.

Probably present (and perhaps with the ground work done when the adjuster gets there) is the Consolidated patrolman on the beat, if the accident occurs at night when the over-the-road trucks are in operation. There are three such patrolmen who cover roughly the same territory as the insurance men. They travel in company-owned light trucks equipped with jacks, flares, lanterns, emergency kits, drop lights, acetylene flood lights, axes, tools, spare tires and fire extinguishers. These patrolmen go on duty when the trucks start rolling at night and call the dispatchers at that time. They tell the dispatcher what route they will cover that night, there being several routes that each one can take, and then it is too late for the company grapevine to warn drivers.

THESE patrolmen are engaged largely in preventing accidents; they do not sit around and twiddle their thumbs until an accident happens. They cover the Consolidated routes all night long checking to see that drivers obey the company rules. The dispatcher knows where to locate them at way stops such as popular driver lunch rooms and the patrolmen call the dispatcher at intervals to report. The dispatcher can actually communicate with any patrolman

(TURN TO PAGE 86, PLEASE)

COMMERCIAL CAR JOURNAL
MAY, 1937



ARROW APPROVAL AND ACCEPTANCE DUE TO SUPERIORITY

Compare Arrow safety devices with others. You'll find they're not gadgets. They're built for a purpose—they're built for service. That's why fleet owners everywhere specify ARROW SAFETY.

Arrow Signals Legally Approved

Install Arrow Directional Signals, not just to be within the law, but to add safety to "payloads." The Arrow Line includes all popular approved combinations. Arrow is the choice of fleet operators and truck manufacturers everywhere.

ARROW DRIVING LIGHTS

They are scientifically designed to capture all "fringe" rays and concentrate them into a single, powerful, penetrating, fan-shape beam. Improve visibility at night with Arrow Driving Lamps.



Ask your
Jobber

**ARROW SAFETY
DEVICE COMPANY, INC.**

MIDFORD, NEW JERSEY

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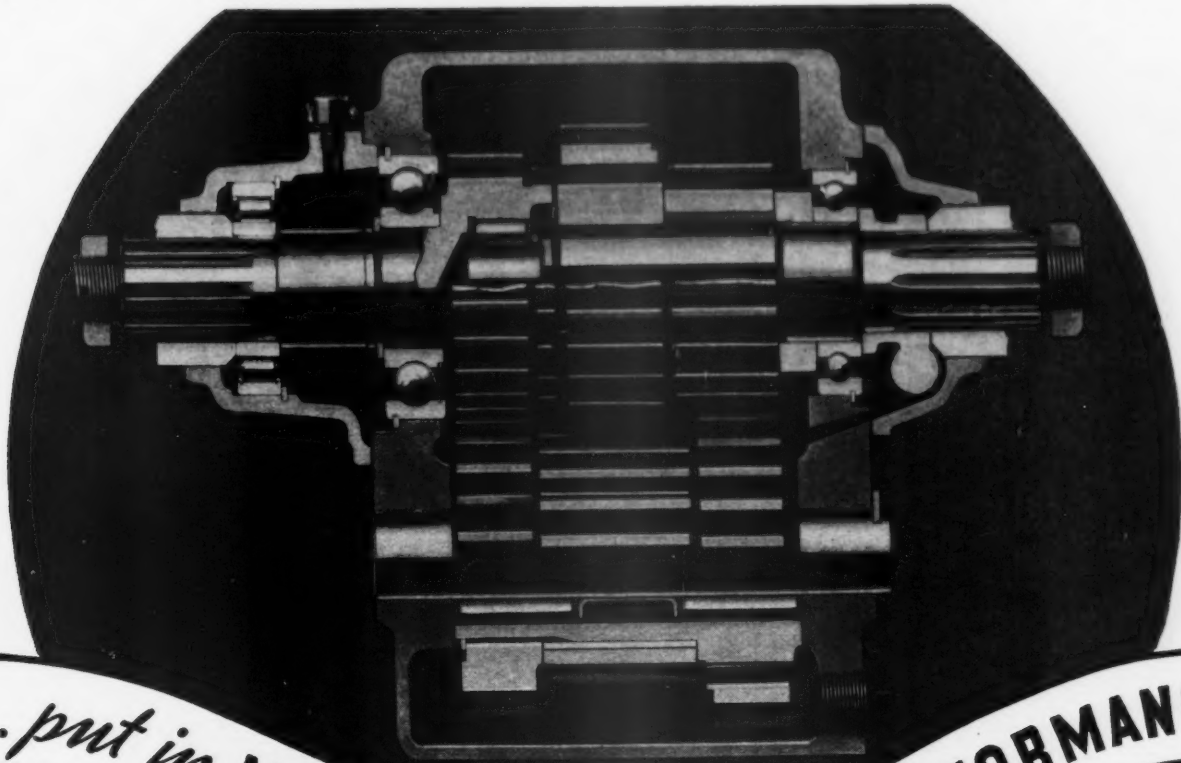
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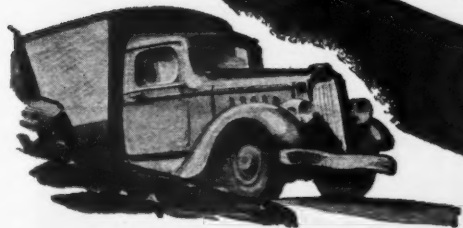
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COMMERCIAL
MAY, 1937

EQUIP YOUR TRUCK FOR PROFIT



...put in MORE GEARS for REAL PERFORMANCE



A good engine is badly handicapped without the right gear ratios to properly transmit its power. There is no point in equipping your truck with a trailer, third axle and overload springs if you don't add extra gear ratios too! For real performance you need more gears and plenty of gear ratios. A Watson-Brown-Lipe will give your truck 12 forward speeds. It will pay for itself quickly—then it will pay you! From the minute it's installed you'll know you have the most efficient helper unit you can put in a truck.



GET THIS BOOK →

AUXILIARY

WATSON-BROWN-LIPE

Transmissions H.S. WATSON CO., SAN FRANCISCO & TOLEDO

20%
LESS FUEL
.
23%
FEWER R.P.M.'S
.
52%
MORE POWER

SEE YOUR NEAREST DEALER

Atlanta, Georgia, Truck
Equipment Co.
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Body Sales Co.
Charlotte, N. C., Baker
Equipment Engr. Co.
Charleston, W. Va., Baker
Equipment Engr. Co.
Chicago, Ill., Erlinder-Platt
Sales Corp.
Chattanooga, Tenn.,
A. Fassnacht & Sons
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Body Sales Co.
Chicago, Ill., Truck
Equipment Co., Inc.
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Brothers
Detroit, Mich., H & H
Wheel Service, Inc.
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Herring-Wiesler Co.
El Paso, Tex., Watkins
Motor Co., Inc.
Fort Wayne, Ind., Allied
Truck Equipment Co.
Fort Worth, Tex., Hobbs
Mfg. Co.
Great Falls, Mont., Hines
Motor Supply Co.
Havre, Mont., Hines Motor
Supply Co.
Honolulu, T. H., Continental
Trailer & Equipment Co.
Houston, Texas, Hobbs
Mfg. Co.
Indianapolis, Ind., Allied
Truck Equipment Co.
Kansas City, Mo., Cons.
Body & Trailer Co.
Long Island, N. Y., Truck
Equipment Co., Inc.
Los Angeles, Calif.,
Lambert Co., Ltd.

Lewistown, Mont., Hines
Motor Supply Co.
Louisville, Ky., Dealers
Truck Equipment Co.
Miles City, Mont., Hines
Motor Supply Co.
Minneapolis, Minn.,
Charles Olson & Sons
Milwaukee, Wis., Shadbolt
& Boyd Co.
Montreal, Canada,
Cusson Bros., Ltd.
New Orleans, La.,
John H. Walton
New York City, N. Y.,
Wheels, Inc.
Newark, New Jersey,
Wheels, Inc.
Omaha, Nebr., Badger
Body Mfg. Co.
Ontario, Canada, Wheel &
Rim Co., of Canada, Ltd.
Phoenix, Ariz., Welch
Mfg. Co.
Pittsburgh, Pa.,
The Schnable Company
Portland, Ore., Wheel &
Rim Service, Inc.
Philadelphia, Pa., Truck
Equipment Co.
Richmond, Va., Baker
Equipment Engr. Co.
Reno, Nevada, Dennison
Equipment Co.
Rochester, N. Y., Truck
Equipment Co., Inc.
Seattle, Wash.,
A. D. Blackler Co.
Shelby, Mont., Hines
Motor Supply Co.
Sheridan, Wyo., Hines
Motor Supply Co.
St. Louis, Mo., McCabe-
Powers Auto Body Co.
Spokane, Wash.,
Roy E. Hotchkiss Co.
Salt Lake City, Utah,
Roedel & Low
Syracuse, N. Y., Truck
Equipment Co., Inc.
Toledo, Ohio, Turner
Brake Service
Tulsa, Okla., Braden
Winch Service Co.
Washington, D. C.,
S. J. Meeks' Son



Hein-Werner Hydraulic Jacks are exceptional values...and today every model in this complete line represents more for the money than at any other time in the phenomenal growth of this company.

This popular line of jacks, all of which are built right and priced right, include the "Bullet" Model, 1½ ton capacity at \$3.30 (West Coast \$3.80)... Light Truck Special, 2 ton model, \$4.40 (West Coast \$4.95)... For light trucks, 3 ton models at \$8.40 (West Coast \$9.00)... 5 ton model, \$10.50 (West Coast \$11.25)... 7 ton models at \$13.90 (West Coast \$15.00)... For heavy trucks, buses and shop use—12 ton models \$20.50 (West Coast \$21.75)... 20 ton models, \$34.50 (West Coast \$36.00)—and for modern passenger cars, our new BUMPER-LIFT Model at a new low price of \$5.45 (West Coast \$6.00)... Above prices net to dealer.

Hein-Werner also makes a complete line of Service Jacks... Ask for details.

HEIN-WERNER MOTOR PARTS CORP.
WAUKESHA, WISCONSIN

*More for
the money*

FEW MODELS ENGINEERED TO DO THE WORK OF MANY

HEIN-WERNER
hydraulic JACKS

(CONTINUED FROM PAGE 82)

in any given 20 minutes. Evidence that this system works is provided by the fact that only over-the-road trucks with odd-sized tires carry spares. The others in case of a flat call the dispatcher, who gets the patrolman started to the stalled truck. Certainly this plan would not work if the patrolman could not get there with a spare promptly.

None of the patrolmen are ex-truck drivers, the reason being chiefly that the company feels that it would be hard for an ex-truck driver to check up and report on his old buddies. The patrolmen are uniformed and the trucks they drive are plainly labeled so there is no doubt in the minds of company drivers or any other interested parties as to who the patrolman might be. The patrolmen are skilled in changing tires and in minor service jobs which might stall a truck.

One of their jobs is to keep trucks moving. The company believes that a stalled truck is a first-class accident hazard. If the mechanical condition is such that a mechanic is needed, the patrolman calls up for one if the driver has not already done so. Spare tractors are kept at terminals along the route so that only a trailer failure can keep the bulky part of the vehicle tied up.

Typical of a patrolman's report is "Found Benny — asleep in the cab behind the diner at —. It was below freezing and the motor was running." (Benny will have to do some accounting because Consolidated drivers are not overworked and they are not permitted to tie up equipment while they sleep along the road.) Another report indicates that a tail gate chain ring broke and several cases of goods fell off. A driver behind picked up what

was recovered and a patrolman scoured that part of the highway to be sure that no goods were being left along the road.

When the patrolman supplies evidence that a driver has broken a company rule he is finished with the case.

The case is handled by Carl Kask, who handles all labor situations for the company. He was taken from among the drivers where he was the union president. He has the confidence of the drivers and he talks their language. The drivers know that their relations with the company will be handled by a man who is basically fair and who understands and appreciates their problems. Present at all of the hearings is an employee representative of their own choosing and he must agree that any form of discipline taken is justified. Thus it is impossible for rumors that Consolidated is unfair to drivers to get around the

More for
the money

Look 'em all over and you will agree that Hein-Werner offers more for the money than you ever expected to get in a hydraulic floor jack.

All five models in this outstanding line have structural steel side members... Low at 4"—and saddle high point at 24½"... 90° stroke on all handles... Saddles are 6½" in diameter.

All models have steel hydraulic units except Model 0324G... All have safety valves and by-passes—and automatic oil level... And all have release valves that can be locked and key removed.

Model 0237J—FLOOR and CURB JACK, without swivel wheels... 2 ton capacity \$34.00 (West Coast \$37.00).

Model 0237K—FLOOR and CURB JACK, with swivel wheels, (shown above at right)... 2 ton capacity \$36.50 (West Coast \$40.00).

Model 0237L—FLOOR JACK (shown above at left)... 2 ton capacity \$44.50 (West Coast \$47.50).

Model 0337H—FLOOR JACK... 3 ton capacity \$52.50 (West Coast \$57.20).

Model 0324G—FLOOR JACK... 4 ton capacity \$59.50 (West Coast \$65.50).

All prices are net to dealer... Ask for details on these floor jacks—also on complete line of passenger car and truck hand jacks.

HEIN-WERNER MOTOR PARTS CORP.
WAUKESHA, WISCONSIN

FEW MODELS ENGINEERED TO DO THE WORK OF MANY

HEIN-WERNER
hydraulic JACKS

union because one of their officers has approved the treatment before it becomes effective. Mr. Kask makes it a point to go to the driver who works uninterruptedly until the hearing.

About the worst that can happen to a Consolidated driver, if he stays on the payroll, is two weeks off for which he does not get paid. Drivers are never made to pay for any damage caused by their negligence. The company believes that since they work for wages and do not share in the profits, they should not share in the expenses.

The drivers are paid a predetermined amount for moving trucks between the different terminals. There is a different rate for six-cylinder trucks and four-cylinder trucks. This amount is based on an hourly rate with a slight balance in favor of the truck driver. If the truck breaks down or the truck has to load at

a terminal en route, this time is punched in and out on the route card and the driver is paid an hourly rate for his motionless time. These route cards are watched closely so that a driver cannot work too many consecutive hours with too little rest. Eight hours is the minimum rest period between runs.

The effectiveness of any safety program can be gaged by the reduction of accident frequency and the figures in this case are particularly good. In three years of self-insurance the total number of accidents has been reduced about 35 per cent while the number of trucks operating has doubled. If we may be permitted a few arithmetical gymnastics, this looks like a reduction of about 70 per cent in accident frequency.

If you think that the insurance profit was earned by driving hard bargains with the party of the second part and

not by accident reduction and expeditious handling you have to do a mental hurdle over the fact that in three years of self-insurance that Consolidated has been taken to court only once by a complaining party. This ought to be some kind of a record. While the company may not toss its money around lavishly it certainly cannot be niggardly and have a box score like that one.

This year there happened one of the things that all truck operators dread. A Consolidated truck was involved in an accident in which two women were killed. The insurance department had one claim settled in 10 days and the other within three months. That gives you just a fair idea of the service that Consolidated gets from its insurance department—a service that it was unable to buy outside at any price, much less at a bargain figure.

GAR WOOD HOISTS AND DUMP BODIES

Built to STAY ON the JOB!



Above: C12 body and D6 hoist unit for 1½-2 ton trucks. One of many standard body types available.



Left: 8 cu. yd. rock body with automatic downfolding tailgate that opens when body angle is 18°. Note T44 telescopic hoist, mounted outside truck frame.

For equipment that can start the job—and finish it—your choice should be Gar Wood. Contractors and road builders the world over prefer Gar Wood hoists and bodies—not only because they stand up, but because they are available in any type and size the job calls for.

These illustrations show but a few typical units. For information on the complete line, write for the various bulletins which are available.

Branches and distributors in all principal cities.

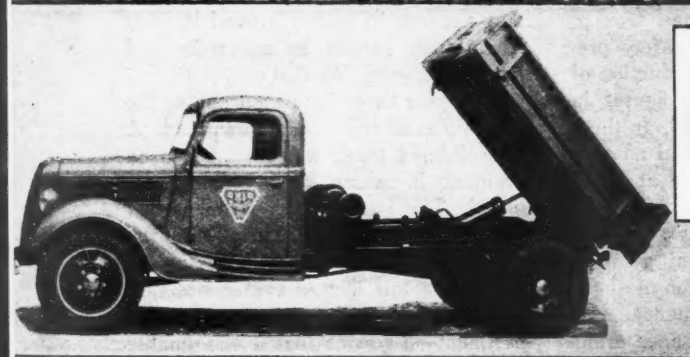
Right: 5 cu. yd. W12 body and F4C cam and roller hoist installed on 1½ ton chassis with 6-wheel axle attachment.



Model F4C cam and roller hoist and W12 body—the standard dump equipment of thousands of truck operators.



2-way side dump unit, with T2 telescopic hoist, for maintenance work.



Above: Combination dump and platform body, type CJ1-D, installed with D6 hoist.



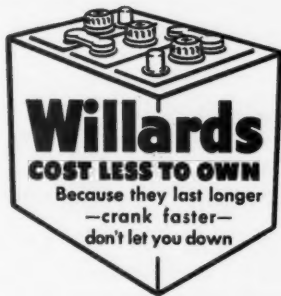
Above: This shows the CJ1-D body converted to a platform, when sides and tailgate are downfolded. Stake pockets are provided. Note the Gar Wood winch, which really makes this an all-purpose unit for any contractor.

GAR WOOD INDUSTRIES INC.



—the trucks that are
"BUILT TO MEET
A CONDITION"

THE **HUG** COMPANY
Highland • Illinois



DETROIT COMPENSATING AXLE

The first practical mechanical device to provide an automatic camber for semi and trailer axles, thus insuring longer tire life and marked fuel savings.

For detailed information write or wire.

Detroit **COMPENSATING** Axle Corp.

Compensating Axles and
Differential Wheels

481 Beaufait Street Detroit, Michigan

Pin Hole Honing is Cheaper and Better than Reaming

● Never a dull tool or blade-marked hole; small investment; nothing to sharpen; no guess-work or inaccurate fits. Low cost replacement Abrasives; Micrometer Adjustment. Makes ANY mechanic an expert pin fitter. Ask your jobber today for Standard or Heavy Duty Pin Hone Set you need.

3-TOOL
SET
\$24.00

HALL
PISTON PIN HOLE HONE

21 MOTOR CAR
MANUFACTURERS

use Weatherhead fuel lines as
original equipment. Can we give
you any better proof of quality?

THE WEATHERHEAD CO.
CLEVELAND, OHIO

D Line of International

(CONTINUED FROM PAGE 39)

The present D line of trucks replaces the C line, which has been marketed by International Harvester Company for a number of years back, and nearly all of the D-line models correspond to a C-line model of the same tonnage rating. Two models which had no equivalent in the C line are the D-5, a light truck intended for multiple-stop service, which has chassis dimensions similar to the D-2 but carries a much smaller, four-cylinder engine (3¼ by 4-in., 133 cu. in., 33 hp. at 2800 r.p.m.). The other is the 1½-ton seat-over-engine type, known as the Model D-300, and with dual-ratio rear axle as the DS-300.

MOST of the new models carry engines of greater displacement and higher output rating than the models they replace. Thus the 1½-ton Model D-30 has a six-cylinder engine of 3 5/16-in. bore by 4½-in. stroke instead of 3 5/16-in. bore and 4½-in. stroke, so the displacement was increased from 213 to 232 cu. in. and the rating changed

(TURN TO NEXT PAGE, PLEASE)

IHC FOUR-WHEEL MODELS

MODEL	Wheelbase C-A	Dimensions	Gross Vehicle Weight (Lb.)	No. Cylinders Bore and Stroke	Displacement	Max. H.P.	Max. Torque
D-2.....	113 125	39 51	4,400	6-3½x4½	213	78	155
D-5.....	113 125	39 51	4,400	4-3¼x4	133	33	89.5
D-15.....	130 128	56 57	6,500	6-3½x4½	213	78	155
D-30.....	155 173	84 102	12,000	6-3½x4½	232	81	170
DS-3C(S)...	128 155 173	57 84 102	12,100	6-3½x4½	232	81	170
M-3 (Milk).....	118	...	7,100	4-3½x4½	186	41.5	125
D-35.....	137 149 161 179	60 72 84 102	13,000	6-3½x4½	241	84	175
DS-35(S)...	137 149 161 179	60 72 84 102	13,100	6-3½x4½	241	84	175
D-40.....	134 146 158 176	60 72 84 102	14,500	6-3½x4½	259	89	192
D-50.....	137 149 161 179	60 72 84 102	17,000	6-3½x4½	298	93.5	218
D-60.....	149 161 179 197	72 84 102 120	20,000	6-4½x4½	361	111.5	268
DR-60(R)...	149 161 179 197	72 84 102 120	20,000	6-4½x4½	361	111.5	268
DR-70(R)...	149 161 179 197	72 84 102 120	24,000	6-4½x5	401	114	308

For running-in new and rebuilt
engines use auxiliary lubricants
containing "dag"* Brand
colloidal graphite.

Acheson Colloids Corporation

Port Huron Michigan

*REG. U. S. PAT. OFF.

★ HEAVY DUTY PLUGS

and
RECEPTACLES



tractor-trailer connections

Truck type connectors for electrical circuits between tractors and trailers not only insure dependable service but are a proved economy. Road delays are reduced, fire hazard and battery troubles prevented, and constant troublesome maintenance eliminated.

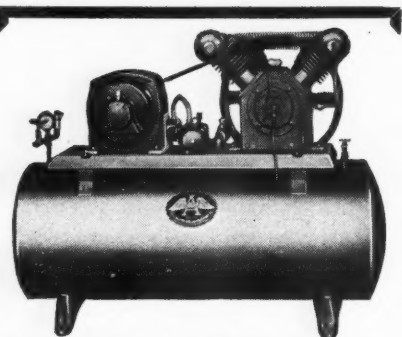
Pyle-National plugs and receptacles are offered in 2, 3, 4 and 6 pole types, rated 20 amperes, for lighting, signal, electric brake, and other circuits. Substantial weatherproof construction, positive locking connection, and self-aligning contacts insure keeping positive contact under vibration, road shocks, and other severe operating conditions.

Send for special bulletin 189-A describing the complete line, with data on installation.

★
THE PYLE-NATIONAL COMPANY
1334 North Keatner Avenue, Chicago, Illinois.

Send me Bulletin No. 189-A on tractor-trailer
plugs and receptacles.

Name
Company
Address



DAYTONS DO THEIR DUTY—

That's Why Dayton's Sell!

You buy a truck not only on its rated horse power, load capacity and economy—you buy it for the good name back of it. Buy Air Compressors that way, too! DAYTON gives you peak capacities, minimum operating expense, years of endurance, rugged reliability—plus Dayton's 50-year record of "Air Compressors Exclusively." . . . A complete line for garage and station—1 to 60 ft. capacities—Single Stage, Two-Stage, V-Type—horizontal or vertical. Every worth-while improvement plus patented DAYTON features.

*Write for bulletin,
stating your needs.*

The Dayton Air Compressor Co., Dayton, Ohio

GENERAL OIL FILTERS

- INCREASES ENGINE LIFE
- DECREASES MAINTENANCE COST

The General Filter meets the demand of the most critical fleet operator—in performance—in design—in initial cost—in service cost.

The finest particles of solids are filtered and trapped in a can type cartridge keeping the crankcase oil in a clean and clear condition at all times.

The initial cost and upkeep are so low that many fleet operators who have found the cost of using filters prohibitive in the past, can now equip their engines with the General Filter and show a remarkable saving.

Write us for details

GENERAL FILTERS, Inc.

9001 Alpine Ave. Detroit, Mich.

(CONTINUED FROM PAGE 95)

IHC FOUR-WHEEL MODELS—Cont.

MODEL	Wheelbase	C-A Dimensions	Gross Vehicle Weight (Lb.)	No. Cylinders Bore and Stroke	Displacement	Max. H.P.	Max. Torque
A-7(R) . . .	160 180 200 225	72 92 112 137	37,000	6-4½x5½	525	123	358
A-8(R) . . .	160 180 200 225	72 92 112 137	37,000	6-5x5½	648	140	460

CAB-OVER-ENGINE MODELS

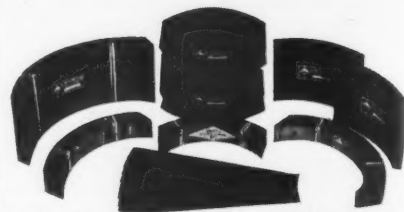
D-300 . . .	99 (c.o.e.)	84 102	12,000	6-3½x4½	232	81	170
DS-300 . . .	99 (c.o.e.)(S)	84 102	12,100	6-3½x4½	232	81	170

SIX-WHEEL MODELS

D-186-T . . .	173 191	102 120	18,000	6-3½x4½	232	81	170
DS-186-T . . .	173 191	102 120	18,000	6-3½x4½	232	81	170
D-216-T . . .	176 194	102 120	21,000	6-3½x4½	241	84	175
D-246-T . . .	161 179 197 215	84 102 120 138	24,000	6-3½x4½	298	93.5	218
D-246-F . . .	161 179 197 215	84 102 120 138	24,000	6-3½x4½	298	93.5	218
D-346-T . . .	161 197 215	84 120 138	34,000	6-4½x5	401	114	308
D-346-F . . .	161 197 215	84 120 138	34,000	6-4½x5	401	114	308
DR-426-F . . .	161 215	84 138	42,000	6-4½x5	450	11.5	335
AR-626-F . . .	180 253	92 165	62,000	6-5x5½	648	140	460

T—Trailing Axle. F—Dual Drive
R—Double-Reduction Axle. S—Two-Speed Axle.
C-A—Back of Cab to Center of Rear Axle.

from 79 hp. at 3400 r.p.m. to 81 hp. at 3200 r.p.m. Rated engine speeds were lowered slightly throughout the line. The D-35 and DS-35 have engines of 241.5 instead of 223 cu. in. displacement and the rated speed of that model also was reduced from 3400 to 3200 r.p.m. The D-40 now carries a six-cylinder 3½ by 4½-in. engine, while the C-40 had a 3 7/16 by 4-in. engine. The greatest increase in engine size occurred in the 4-5-ton model, which for-



BLOCKS
SHOES
ROLL LINING
SEGMENTS



FOR TRUCKS
BUSES
TRAILERS
AND CARS

ASBESTOS MANUFACTURING COMPANY
HUNTINGTON, INDIANA

"Supervised Transportation"



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and the last word in governors

*Write for complete information — there
is a MONARCH distributor in your area.*

MONARCH GOVERNOR CO., DETROIT

THE DEARBORN LINE

CAB OVER ENGINE
FOR FORD TRUCKS

ADDS A CAB-FUL OF PAYLOAD

The same wheelbase yields one-third to one-half more load capacity with no increase in operating cost. An easily-opened hood insures ready service accessibility. See your nearest Ford dealer or write us.

TRANSPORTATION ENGINEERS, INC.
10441 Shoemaker Ave., Detroit, Mich.

Eliminate Vibration With the

OHIO FLEXON



Clutch Plate

Will correct such clutch troubles as clashing gears, jerky starting, vibration and clutch chattering. Flexible center and cushioned surfaces insure smooth clutch performance.

AUTOMOTIVE PARTS DIVISION
Wagner Electric Corporation
St. Louis, U. S. A.

ATTENTION! Truck Distributors

Superior Trailers will make profits for you. We have the protected distributor plan. No factory competition. We offer a national finance plan through C.I.T. A few protected territories are available. Write to

Superior Trailer Manufacturing Corporation
Indianapolis, Ind.

Unconditionally
Guaranteed

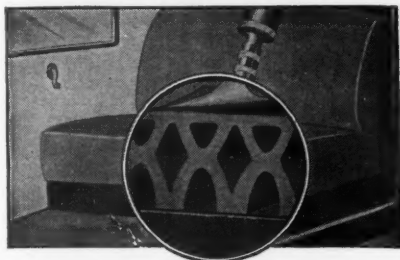
MUFFLERS
TAIL PIPES
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UNIVERSAL PARTS, INC. CHICAGO

Black-Diamond — The Perfect All-Rubber

SEAT CUSHION



The best way to find out how Black-Diamond All-Rubber seat cushions and back rests can be used with best results in your truck is to see how they were used by others... and learn why they were selected. Write us for this information and in addition we will explain why these cushions last longer, are more comfortable, and have no upkeep expense. Low in cost to install.

KARPEX MANUFACTURING COMPANY
1424 E. 19th St. Indianapolis, Ind.

FULLER
TRUCK TRANSMISSIONS
For easy shifting, quiet operation, hauling power and dependability, be sure to choose trucks equipped with FULLER'S.
FULLER MFG. CO.
KALAMAZOO, MICH.

OSHKOSH

4 Wheel Drive Trucks

A proven product. 1½ to 10 ton capacity. Write for complete information.

OSHKOSH

Motor Trucks, Inc.
Oshkosh, Wis.

**DOUBLE
SAFETY**

**POSITIVE
TRACTION**

**DOUBLE
MILEAGE**

McKay Multi-Grip Double-Bar-Reinforced Truck Chains

THE MCKAY COMPANY
MCKAY BLDG. PITTSBURGH, PA.

merly carried an engine of 298 cu. in. displacement but now has one of 401 cu. in.

SOME of the engines have three-point support on the frame and a new front end mounting is used on models D-50, D-60, and DR-70. Flexibility is provided by supporting the engine in a trunion by holding the cap of the trunion down with coil springs and by providing the trunion with a rubber bushing or liner.

The de luxe panel bodies are steel bodies built of large stampings so as to reduce the number and length of welded seams. These bodies are quite light and very rigid. Body frames are formed with cross sills, side pillars and inner panels, longitudinal channel ribs, roof channel rail and roof bows all flanged braced and welded into a rigid unit which is essentially tubular in shape. A pressed-in belt molding constitutes the only trim. The trucks are offered in a choice of colors.

Utility Fleetmen Discuss Problems

(CONTINUED FROM PAGE 21)

"9. The 'sump' should be of ample size to collect the heavier solid impurities and water.

"10. It should present no oil loss hazard.

"11. It should be easily adapted to all makes of engines.

"12. It should be sturdy enough to withstand rough service."

In approaching the general conclusions which led off this report on the oil filter session, Professor Clower admitted that varied opinions are held as to the benefits likely to accrue from the use of oil filters.

"No two people appear to agree on this question," he confessed. "I suppose this is because it is very difficult if not impossible to obtain comparative data."

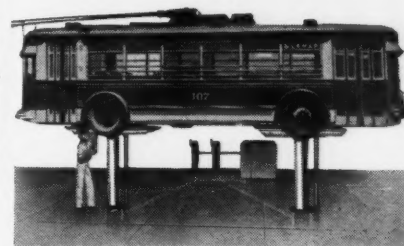
The discussion that followed from the floor supported his admission.

F. K. Glynn, of the American Telephone & Telegraph Co., said: "I believe in filters but I have never been able to find out where my profits come in. Oil filters would have even greater acceptance if their makers could give the proof of profits. So far I don't think they have.

O. A. Axelson, of Columbia Gas & Electric Co., said: "We accept oil filters on faith and we do find them economical. Our oil consumption has been decreased 50 per cent. We have no set period for oil changes. Some of our units are actually running without changes."

(TURN TO NEXT PAGE, PLEASE)

Modernize Your Service Facilities

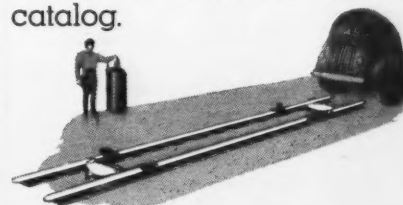


Modern Buses and Trucks are designed with the axles further from the ends, resulting in a greater overhang and making it almost impossible to use portable floor type jacks. Parts are being closer coupled. For these reasons and many others more and more fleet owners are turning to Rotary Bus and Truck Lifts.

Rotary pioneered the Hydraulic auto lift and leads the world today in equipment of this type. Twelve standard models with capacities from 10,000 lbs. to 50,000 lbs. are offered in Bus and Truck Models and special equipment can be tailored to suit unusual requirements.

Safety, dependability, accessibility to under car parts are inherent in Rotary's design and construction. Write for literature or see your own jobber.

Write us TODAY for a catalog.



Jobbers in all principal cities.

ROTARY LIFT CO.
Memphis, Tennessee

SHIP BY TRUCK

For Convenience and Flexibility

Always Door-to-Door Delivery

Quickest and Cheapest to many points

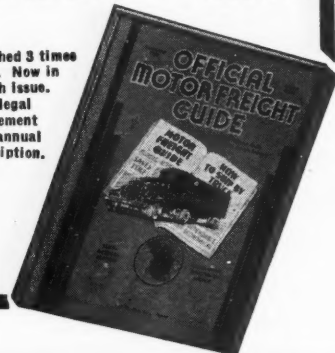
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—FUEL SYSTEM
FOR TRUCKS
REFRIGERATION
AT NO COST
—BY THE FUEL
THAT RUNS THE MOTOR

McCord Radiator and Mfg. Co.
DETROIT

Sterling MOTOR TRUCKS

DIESEL AND GASOLINE

Sterling trucks—built to meet present day operating requirements—provide:

Safer Transportation
Greater Economy
Superior Performance
Longer Life

Select Sterlings for dependable, economical service—there is no job too tough for them.

STERLING MOTORS CORPORATION
MILWAUKEE WISCONSIN

(CONTINUED FROM PAGE 97)

E. W. Jahn, of Consolidated Gas, Electric, Light & Power Co., Baltimore, who is committed to a no-oil-change policy which will be explained presently, challenged oil filter makers and oil companies to "give us a measuring stick so that we know when the oil is dirty."

Robert Cass, of The White Co., Cleveland, said: "We feel that oil filters now are doing a good job. We have no supporting data but it's logical that there should be economies. I think some standard ought to be established for oil filters. For instance, there's the question of size. What size filter should go on a certain size engine? Perhaps the standard should be expressed in straining area of the filter related to the engine size. We are definitely for filters."

A. W. Morton, of American Hammered Piston Ring, spoke of tests made recently with vehicles. He said: "When the temperature rise was high and oil flow was low there was no sticking of piston rings. When the temperature rise was low and the oil flow was high the rings stuck in as many as 10 per cent of the cases."

C. M. Billings, of Gulf Refining Co., said: "I hold no brief for filters but oil contaminated with foreign materials will increase wear. My tests have shown that 90 per cent of the troubles in fleets can be attributed to cold-running motors—water temperatures too low. Proper temperatures decrease cylinder wall wear, ring sticking and gumming and a multitude of things that run maintenance costs beyond what they should be."

James E. Hurn, of DeLuxe Products, said "viscosity and oxidation characteristics are of greatest importance in selection of proper oil" and gave the results of some tests to prove his point."

W. C. Bauer, of Briggs Clarifier Co., agreed with Mr. Hurn's statement and contributed the results of additional tests. His conclusion was that in vocations where trucks make frequent stops and in high-speed, long-distance operations, filters are absolutely necessary. "Between those extremes," he said, "you may get away without a filter if oil changes are made at the right intervals."

Professor Clower closed the discussion by observing that "the first concern should be to keep as many impurities out of the motor as possible. But we must remember that there are impurities in the oil itself and this is where the trouble begins. While the day is not here now, I believe it will come when we will not change oil except to meet seasonal demands."

(TURN TO NEXT PAGE, PLEASE)

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Power Plants from 4 to 200 HP.



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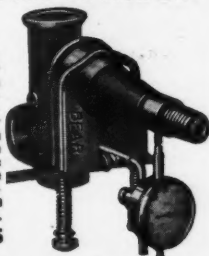
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BENT AXLE? MAYBE IT'S THE SPINDLE!

Tell in a few minutes whether it's the spindle that is causing incorrect camber, hard steering, excessive tire wear or broken bearings. With the Bear Spindle Gauge you simply remove the wheel and revolve the gauge around the spindle to get your answer in thousandths of an inch. Complete, plus shipping charge (3 lbs.), \$25



BEAR MFG. CO. ROCK ISLAND, ILLINOIS

(CONTINUED FROM PAGE 98)

Oil Change

That day may not be here generally, but it is, and has been for some time, for Consolidated Gas of Baltimore. Mr. Jahn, superintendent of its transportation, gave the details of his no-oil-change policy which does not admit the need even for seasonal changes.

The policy was determined upon five years ago after preliminary tests on 20 Ford cars. Samples of the oil were taken at the end of each 1000 miles of operation and chemical analysis showed the following:

"Dilution was found to reach a point of 7 per cent after which it seemed to remain between the limits of 5 and 10 per cent.

"Sediment gradually built up to 1 per cent after which, like dilution, it would remain more or less constant.

"Sludge found in the crankcases when examined varied considerably in amount but after close scrutiny it was concluded that there was less sludge in the crankcases of the cars on tests than in cars in which the oil was changed at regular periods.

"Although samples were not checked for acidity, we have had but very few cases of bearings being attacked. There has been a great deal said about disintegration of bearings due to acidity but we have yet to experience it."

The practice now followed for the entire fleet is:

Sometime between April 15 and May 15, depending upon weather conditions, all oil for replenishing purposes is of S.A.E. 20 viscosity for passenger cars, and S.A.E. 40 for trucks. Between Oct. 15 and Nov. 15 the oil for passenger cars is S.A.E. 20-W and for trucks S.A.E. 30 with a low four-point. To safeguard against possible troubles from sludge, particularly on units where operating conditions result in an accumulation of condensation in the crankcase, the crankcases of trucks are being inspected at 10,000-mile intervals and of passenger cars and light sedan deliveries at 15,000 miles. Oil is bought on broad specifications because the company does not want to limit

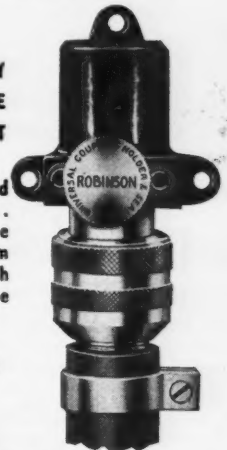
(TURN TO PAGE 100, PLEASE)

THE ROBINSON UNIVERSAL COUPLING HOLDER

- HOLDS SECURELY
- SUPPORTS HOSE
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- Fits all standard type couplings. . . .
- Protects male coupling from damage which destroys brake efficiency.

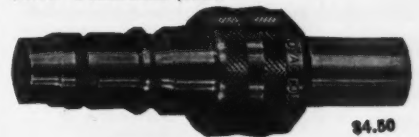
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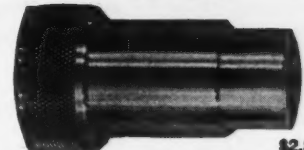
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Connected . . . Autovac is fully open! Disconnected . . . Autovac is tightly closed! No valve to turn off . . . nothing left to chance. Saves time and money. Autovac protects hose lines and mechanism from water and dirt . . . It's automatically sealed when not in use. Furnished in 3 sizes $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ inch. MALE \$4.50. FEMALE \$2.80.



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A ST. PAUL HYDRAULIC HOIST AND BODY FOR EVERY MODEL OF TRUCK



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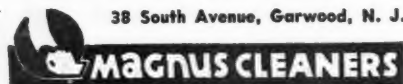
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Crusts of dirt, grease and oil disappear after a simple soaking and washing with MAGNUS CEMENT CLEANER. AND, the fire hazard of cleaning with gasoline is eliminated—you simply mix with water and clean.

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are available in sizes ranging in capacities from 1½ to 15 tons.

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...Shoulders the
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BALD TIRES BAD BUSINESS

Don't become liable for skid damage. Many states now legislating against bald tires. Protect yourself inexpensively, and increase mileage on your tires.

TRACTION TREADS — 5 MINUTES

Don't remove tire from wheel. Push Roll-About Groover under it and start. Puts 1937 anti-skid tread on 1936 tires easily with minimum loss of rubber. No skill required; cuts fast and clean without electric current. Write now for complete details or demonstration.

SAFE TOOL MFG. CO.

DEPT. 100

BRIDGEPORT, PA.

(CONTINUED FROM PAGE 99)

itself to any one branded lubricant.

Mr. Jahn said the effects of this practice were as follows: "While this policy undoubtedly results in an increase in the actual consumption of oil per mile, this is more than offset by the saving effected by not changing every 1000 miles. The total consumption of oil for the first year under the policy was cut about one-half. We also found that maintenance costs steadily declined from \$0.023 in 1930 to \$0.01 in 1936. We have increased the mileage on all our equipment before it is replaced and the effect of our practice on repair and depreciation costs has not been detrimental. As a result of our favorable operating experience we will continue the policy until we find a practical method which is entirely satisfactory and more economical."

THE no-oil-change policy found support in a representative of the Chesapeake & Potomac system of Washington, whose name we failed to catch.

"After nine months of checking by the Bureau of Standard," he said, "we saw no reason why we should not continue our no-change policy. We have carried on with it. In cold weather we may dump a little kerosene in the crankcase. Condensation is our only fear and we haven't found a way to overcome it."

E. J. Fraser, superintendent of bus maintenance of United Railways & Electric Co., Baltimore, said he changes oil at approximately 5000-mile periods. At such times the sump is dropped and the pan is given a thorough cleaning. Filters are changed every 2500 miles.

"Sludging I think is a matter of ventilation," said Mr. Fraser. "I don't think sludge is injurious to the engine. We have an engine that has gone half a million miles; it has never had an oil filter; it has its original parts except for pistons."

Mr. Jahn expressed the opinion that sludging seems to be on the decrease. He attributed this to two things: full-jacketed cylinder blocks giving more even temperatures, and the so-called Indiana oxidation test resulting in

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● A metal faced plywood panel of high quality for building better panel bodies.

Armorply is the lightest panel of its type available. It is faced with rust resisting galvanneal steel, and has a hard birch back.

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JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds, for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y.; Shell Petroleum Co., Atlantic Refining Company, Tidewater

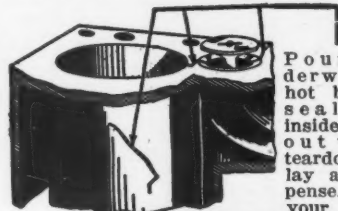
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Pour Wonderweld in hot block, seal cracks inside and out without teardown delay and expense. See your jobber.

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COMMERCIAL CAR JOURNAL
May, 1937

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● The Briggs Oil Clarifier keeps engine oil dirt and acid free by operating on the refinery principle of filtration through Fullers Earth . . . adapted and improved to automotive use by compression into a molded block by a patented process. It adsorbs grit and dirt, absorbs sludge-forming acids. Oil is kept at refinery purity . . . you never have to change your oil! Service records prove it.

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Up to 23,000 more miles of safe non-skid wear added. Any one can operate this electrically controlled tool. Makes all designs. Regrooves all size tires.

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Complete Kits Available at your nearest Midland Distributor

more highly refined oils which in turn result in less condensation. He said he did not know how "you can get away entirely from condensation."

Throttle Stops

THROTTLE stops for lighter vehicles found an ardent advocate in O. A. Axelson, of Columbia Gas & Electric Corp., New York City.

"Our companies are now operating more than 900 vehicles equipped with throttle stops," Captain Axelson said. "Our purpose in putting them on our cars and pick-ups was primarily to increase gasoline mileage. They did, to the extent of some 30 per cent but that was only the beginning. Our records show that tires last from 25 to 50 per cent longer; that we use less oil; that road failures are less frequent; that rear-end troubles have been practically eliminated; that accidents have been less severe, and that maintenance, particularly on the engine, has been greatly reduced. All these things mean money savings and, in the aggregate, have made the use of throttle stops very much worth while."

On the heavier type vehicles the company uses governors, and has hundreds of them installed.

Throttle stops are available on so called "economy models" of passenger cars and Captain Axelson made it clear that these economy cars may not be advisable in very hilly country or for roads and loads which require every bit of available power. For level, open country and for stop-and-go driving, he held they are particularly effective. Even with throttle stop the vehicles have a top speed of from 55 to 60 m.p.h.

In the discussion H. H. Allen, of the I. C. C. Bureau of Motor Carriers, raised the question whether this method of governing speed does not create a hazard, especially on hills, for which the governed car is indirectly responsible because it tempts other drivers to take chances in passing.

Captain Axelson doubted very much that with a top speed of 60 m.p.h. the safety factor would enter on hills. He admitted that with throttle stops no appreciable decrease in the number of accidents had been experienced. However, the severity of accidents had been decreased, resulting in lower costs.

T. C. Smith, of the American Telephone & Telegraph Co., said: "We have experimented with economy models a long time, and I have a feeling from experience that the decrease in the ability of the car with the use of a throttle stop definitely involves safety factors, and this together with the unfavorable driver reaction should

(TURN TO PAGE 106, PLEASE)

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COMFORT

SPONGEX Seat Cushions are soft and resilient. They absorb shocks and vibrations, relieve riding and driving fatigue.

Spongex Cushions of LIVE RUBBER need no replacing — are durable. Nothing to break, no packing down. Will outlive the bus or truck.

Made to any size or thickness. Inexpensive to buy, profitable to use. SPONGEX Cushions should be standard on your fleet. Write for complete information and prices.

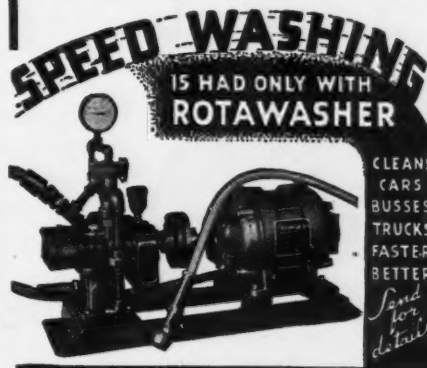


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**The SPONGE
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SPEEDWASHING cuts car washing costs!

Whether you're washing cars for profit, or maintaining the appearance of a fleet, this means SAVINGS



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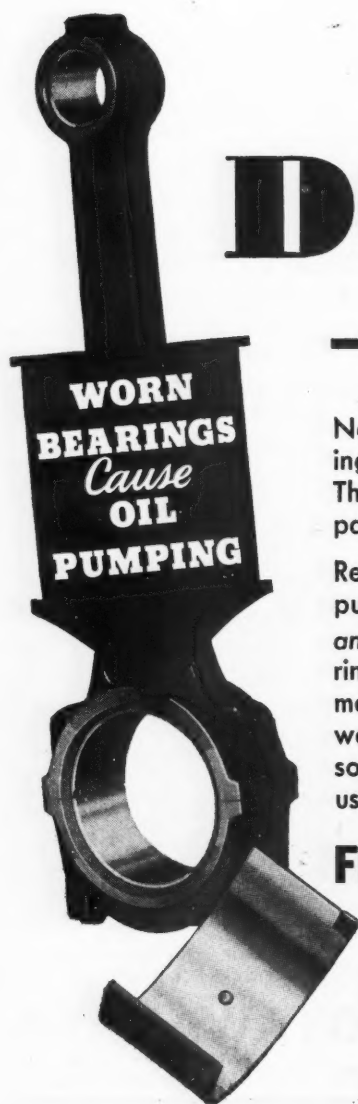
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DON'T GUESS

- check them all!



Never guess at the cause of oil pumping. The chances are you will be wrong! The old shell game is a safe bet compared with this one!

Remember the four big factors in oil pumping: Worn rings, pistons, cylinders and bearings! Today we know that new rings are not a cure-all — that when main and connecting rod bearings are worn, oil throw-off is out of control, soon "cokes up" new rings, makes them useless for oil control.

New rings, pistons and cylinder rebor-ing do their part, but when oil pumping starts at the bearings, correction must start there, too. So, when you have an engine opened up to correct oil pump-ing—check all four factors! If bearings are worn, replace with Federal-Mogul insert precision-type bearings, or with rods babbitted by Federal-Mogul. They are precision products, engineered for the job of oil control.

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REPLACE WITH

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FEDERAL**

ONLY COMPLETE BEARING SERVICE

THE COMPLETE FEDERAL-MOGUL LINE

Cadmium-Silver-Copper-Lined Bearings; Bronze-Back, Babbitt-Lined Bearings; Steel-Back, Babbitt-Lined Bearings; Piston Pin Bushings; Connecting Rod Service; Connecting Rod Bolts and Nuts; Bearing Anchor Screws; Luminum Shims; Solder; Bronze Bars and Babbitt Metals.

COMMERCIAL CAR JOURNAL
MAY, 1937

MASTERCRAFT



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For Safe and Fast Food Transportation

Money Savers — Continued

98F The hose clamp with the thumb screw is shown on page 98. It's NOC-OUT, standard clamp of the industry. When writing for information don't forget to check the post card.

98G It's good economy to buy EDWARDS Quality Semi-Trailers. See page 98, and check post card for information.

98H DeVILBISS offers a complete line of Spray-Painting Equipment, Spray Booths, Canopy Exhaust Systems, Exhaust Fans, Air Compressors, Hose and Hose Connections, Oil Guns. See page 98, and check card.

99A KINNEAR Truck Doors, which roll up like a window-shade, are never in the way. See page 99. Check the post card for further information.

99B You can be sure that skidding won't affect fleet schedules when your trucks are equipped with LINTERN Sanders. See page 99, and check the post card for details.

99C If you're interested in all-wheel-drive trucks, you're interested in MARMON-HERINGTON. See page 99, and check post card for details.

99D The BEAR Spindle Gauge tells you simply and instantly, to a thousandth of an inch, whether spindles are straight. See page 99, and check the post card.

99E There's a ST. PAUL Hydraulic Hoist and Body for every model of truck. See page 99, and check post card for details.

99F The ROBINSON Universal Coupling Holder supports the hose and seals it from dirt; the ROBINSON Autovac Coupler is open when connected, tightly closed when disconnected. See page 99, check the post card for details.

99G For new equipment and for replacements, DUPLATE Safety Glass is a good glass to insist upon. See page 99, and check post card for details.

100A MAGNUS Cement Cleaner not only cleans, but also whitens and hardens your cement floors and driveways. Read about it on page 100, and check post card for details.

100B Read about ARMORPLY, the panel material faced with rust-resisting steel, on page 100.

100C Skid damages can put big dents in fleet pocketbooks; avoid them with the ROLL-ABOUT Groover. See page 100, and check post card for further details.

100D There's an FWD Truck to exactly fill your trucking needs. See page 100, and check post card for details.

100E Your batteries will give better service if you equip now with VOLT-O-MATIC Generators. See page 100, and check post card for details.

100F The world's largest operators of commercial vehicles use JONES PORTABLE TACHOMETERS to check engine speeds, for tune-ups, and for seating governors. A recommendation like that means you ought to know more about them. Read the ad on page 100, then get more information from us via the post card.

100G Doubled load capacity, tripled lining life, permanent equalization—sound like extravagant claims, but they're the usual thing with LINDERMAN Brakes. See page 100. Check the post card for all the details.

100H Avoid delay in sealing valve port and inside cylinder cracks—use WONDER WELD. See page 100, and check post card for information.

101A The BRIGGS OIL CLARIFIER keeps engine oil dirt and acid free—and you never have to change your oil. See page 101, and check the post card for details.

101B The new ALCO 4-Wheel Drive for Fords and Chevrolet offers novel performance features. Turn to page 101, check the post card for information.

101C Stops in time will mean big savings to your fleet—specify MIDLAND (Christensen) Power Brake Equipment. See page 101, and check the post card.

101D For less driver fatigue and more seat cushion economy equip with SPONGEX Seat Cushions. See page 101, and check the post card.

101E When you have a ROTAWASHER you have speedwashing. Read about it on page 101, and check the post card for more information.

102 Stop oil pumping by replacing worn bearings with FEDERAL-MOGUL Insert Precision-Type Bearings. See page 102, and check post card for details.

105 MASTERCRAFT Truck Bodies are designed to serve meat packers, provisioners, bakers, dairies. See page 105, and check the post card.

106 SHULER Tubular Axles have the strongest form per pound of weight. Read about this and other advantages on page 106, and check post card for details.

107A You'll not only conform to the I.C.C. Regulations with K-D Safety Lighting Equipment—you'll exceed them. See page 107, and check post card for further details.

107B If you operate ten or more trucks, you can put lettering and illustrations on them more economically with AMERICAN Decal Transfers. See page 107, and check post card.

107C Turn to page 107, and read about the advantages of ECOLITE Electric Flares. Check post card for information.

108A You probably have some trucks which could earn more if fitted with LITTLE GIANT Frame Extensions. See page 108, and check post card for details.

108B Check the post card for the free Bus & Truck Gear Manual offered by the makers of BRAD FOOTE Gears, the gears to use on your next replacement. See page 108.

109A See on page 109 the sensible KING-HAM-UNIVERSAL Unit for furniture hauling. Check the post card for further details.

109B The DELTA 6-volt Power Flare gives 80 to 100 hours of flashing or constant light on one 6-volt dry battery. See page 109, and check post card for details.

109C Save air, time, and paint with the new SAYLOR-BEALL Spray Gun. Read about it on page 109, and check post card for information.

109D No oiling, no greasing, no maintenance is necessary, and you get railroad braking efficiency, with LATHAN Power Brakes. Turn to page 109, and check post card for details.

109E Your drivers need HINDVIEW Pull-out Mirrors to see around your trucks and trailers. See page 109 and check card for details.

111 Turn to page 111, and take a look at the advantages of LONG Clutches. Check post card for details.

112 You can make any of your trucks into ideal stationary or mobile power plants with BROWN-LIPE Power Take-Offs. See page 112, and check the post card.

Specify **MILEY** **Brake Lining**

Nine types that not only assure the correct friction but the correct structure and best braking material for each brake.

BLACK GOLD

MILEY BLACK GOLD is the only metal base lining. Dense as cast iron, it is the best for Bendix, Lockheed, Steeldraulic, and Huck brakes—for all "depression year" mechanisms and others that compensate for lack of drum area with extreme operating pressure.

MILEY EBONITE Heavy Duty, a new zinc wire, synthetic resin, semi-moulded, that comes in rolls, sets, and on Miley Ready Lined Brake Shoes. Strictly heavy duty lining—that gives 2 wheel brakes 4 wheel power and steps up 4 wheel brakes to power-brake performance. The best lining for Fords, Heavy Trucks and External Brakes.



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One or two experienced automobile sales executives to invest in and actively manage a unique electric truck development now in production by an old manufacturer. Insufficient executive time and manufacturing capacity prevent proper sales. All correspondence considered confidential. Address Box 1704, Commercial Car Journal.

(CONTINUED FROM PAGE 101)

make us pause before putting on throttle stops."

N. Nicholson, of Consolidated Gas of Baltimore, expressed the belief, based on maintenance experience, that in trying to get away fast the driver forced the throttle and thus abused clutches and transmissions.

Randolph Whitfield, of Georgia Power, Atlanta, declared his company had used throttle stops for four years. Passenger cars and light commercials are now 95 per cent equipped.

Utility Bodies

MR. SMITH, of A. T. & T., presented a very thorough paper on utility trucks, cabs, bodies and auxiliary equipment. The discussion dwelt largely on the need for standardized bodies and the effect of high traction type tires on steering and maintenance.

E. J. Graham, of Public Service Co. of Colorado, Denver, agreed that there is added cost in replacing front bushings but he said the high traction tires are found necessary in snow to prevent

side slippage on mountain routes.

J. R. North, of Commonwealth & Southern, Jackson, Mich., said with the high traction tires with V-shaped treads are very good but there still are times when chains are needed.

Standardization of bodies was held desirable but difficult of attainment at the moment because of changes in operating practices (a fact brought out by J. Y. Ray, of Virginia Electric, Richmond, and J. M. Orr, of Equitable Auto, Pittsburgh), and unstandardized CA and width of frame dimensions.

Mr. Smith said the ideal they were now shooting at was a body construction which would last the life of the vehicle—not of two vehicles. Thicknesses of metals, supports, etc., are all being determined on that basis.

Supervision

SPEAKING on the subject "Executive Control of Utility Fleet Operations," F. B. Flahive, comptroller of Columbia Gas & Electric Corp., frankly asked the operators whether fleets were

TURN TO PAGE 108, PLEASE)

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POSITION WANTED

FLEET SUPERINTENDENT familiar with accident prevention work. Capable of saving salary as superintendent through reduction of accidents and claims. Ten years experience. Box 1706, Commercial Car Journal.

AVAILABLE — EXPERIENCED TRUCK & TRUCK EQUIPMENT SALESMAN

12 years experience as sales and district manager. Valuable dealer and fleet connections from coast to coast. Proven record for ability to produce. Connected at present, but seeking better opportunity. Address Box 1705, Commercial Car Journal, 1015 Stephenson Bldg., Detroit, Mich.

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GRAMM TRAILERS

All Types for All Purposes
Complete information gladly furnished
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SAFETY K-D PRODUCTS EXCEED I. C. C. Regulations



Model No. 506 Clearance
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even **BETTER** than the
I. C. C. requires! Yes, even
better than I. E. S.-S. A. E.
specifications by 3 times or
more! Better for you —
drivers — loads!

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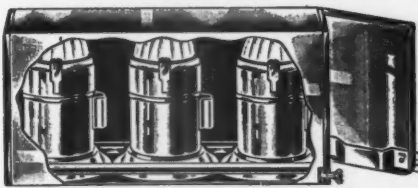
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Half a mile.

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If your jobber cannot supply you, write us at once.

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Three Ecolite Electric Flares and Container, Steady Burning Model, Number 200S—\$8.00 list.

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AUTOMOTIVE TRUCK EQUIPMENT

FRAME EXTENSIONS

for school and passenger busses, ambulances, police patrols, hearses . . . and for florists, bakers, laundries, cleaners, furniture dealers, wholesalers, etc.

Increased loading space means reduced mileage, lower labor and delivery costs, increased earning capacity. Four standard sizes add up to 72 inches to any type truck chassis . . . special sizes to any length desired. Cut-frame and slip-on types. Roller bearings. Standard parts. Simple design and construction . . . easily installed . . . dependable . . . no service grief.

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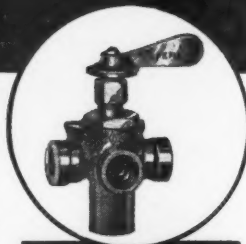
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MORE MILEAGE . . . EASE OF REPLACEMENT
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Now you can make fuel tank changes on 3-tank trucks WITHOUT STOPPING!



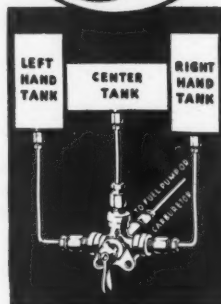
IMPERIAL'S new 4-way Hi-Duty Shut-Off Cock, for use on trucks and buses having 3 fuel tanks, eliminates the necessity for dangerous stops on highways to change from one fuel tank to another . . . stops which are particularly hazardous at night, on steep grades, and on crowded highways. With this inexpensive valve installed, the driver can make tank changes in a second right from the cab without even slackening speed.

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Try one of these Imperial No. 114-HD 4-way shut-off cocks and you will soon equip your entire fleet.

Order from your local jobber.

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IMPERIAL
*Tubing, Fittings
and Service Tools*

Diagrammatic view of typical 3-tank installation showing how the No. 114-HD 4-way shut-off cock provides shut-off control for all tanks from one convenient location. Note integral bracket for mounting on kick board under driver's seat or under dash board.

(CONTINUED FROM PAGE 106)

really managed or merely maintained. He declared:

"My observations lead me to believe that real fleet management is not so common. You men are entrusted with the running of your companies' motor transportation, and that trust is a real responsibility. I know of no other operation in the utility field where looseness is so apt to creep in and grow to vicious proportions. What right have you to permit the misuse of company equipment; the piling up of unnecessary mileage; the waste of gasoline and oil; the personal use of company cars; or to tolerate improper driving?"

Mr. Flahive declared the work of the fleet superintendent was increasing in importance and made a plea for the elimination of gadgets from cars intended primarily to be a working tool.

Warren R. Pollard seconded Mr. Flahive's thesis when he said, "the automotive supervisor should report to the management in order to obtain the best use, and to enforce the proper control of equipment, without embarrassing some departmental head."

Mr. Glynn said he was against "gadgetitis and chrome plating" but pointed to the fact that under modern mass-production methods it was really cheaper to put out a car with the gadgets wanted by the general public than to stop the production line to take them off.

John Mack, of Chrysler, made the additional point that a gadgeted car brings a better trade-in because it is easier to sell.

It is safe to say that the matter of vesting fleet superintendents with greater authority and making them directly responsible to management was the only one of the entire session on which there was unanimity of opinion. And rightly so, if an editorial expression may be permitted.

Pooling

IN his paper on "Pooling of Passenger Car Equipment," Mr. Ray, of Virginia Electric, said "Pools can and should be so set up as to avoid objectionable and expensive features and encourage the joint and correspondingly economic use of passenger car equipment." He described his own pooling set-up in such interesting detail that it will be published as a separate article next month.